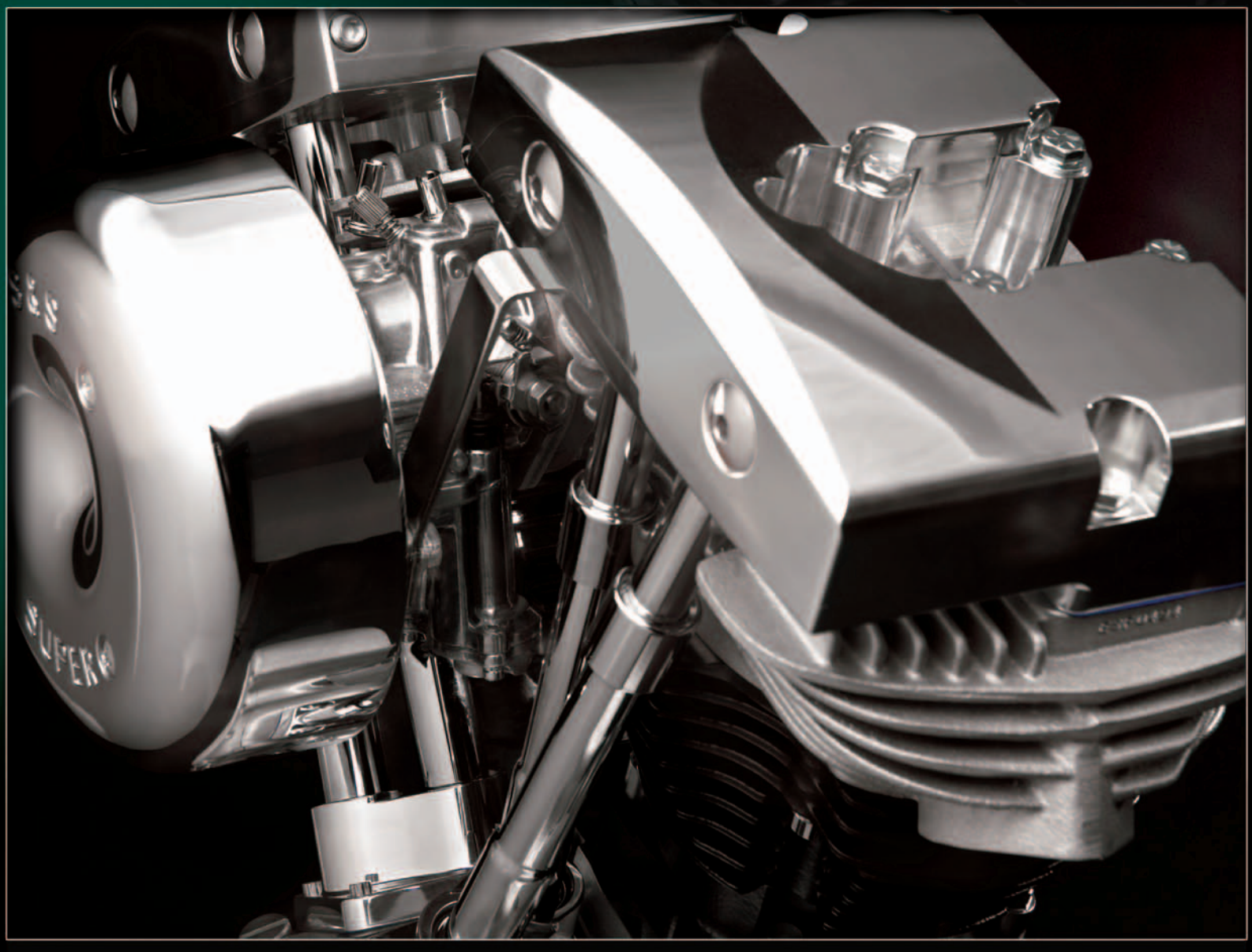

Shovel, Pan, Knuckle

S&S Performance Guide 2005 – Performance is in stock at your local S&S Dealer!

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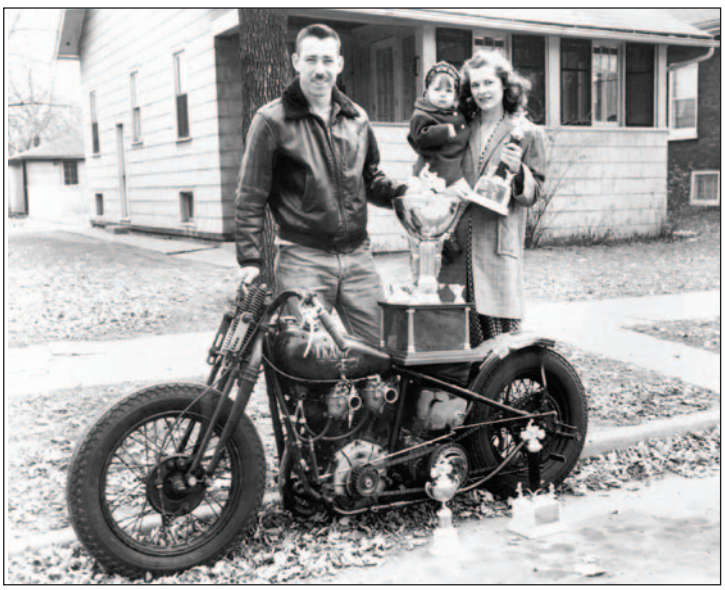
Are you fast enough to join?

America's Engine Builder

Ask American V-Twin enthusiasts to name one manufacturer of high performance engines, and nine times out of ten they'll say S&S! And you gotta' wonder about the one guy who didn't. S&S is the largest manufacturer of engines for the V-Twin high performance aftermarket. S&S engines power more custom V-Twins than anyone else's, and they have always been popular as a high performance upgrade in stock motorcycles. What could be simpler? Take your old engine out, and put a new S&S engine in. It's just that simple, and you have a sleeper hog that will run the wheels off the competition. The reason that S&S engines are so popular can be summed up in two words: "Proven Performance".

These industry awards pretty much tell the story. S&S engines have been receiving awards from industry magazines for years. Some that we are most proud of are the "Engine Of The Year" awards from both Hot Bike and V-Twin magazines for the S&S 124 and Tribute 145 engines.

VISIT US AT WWW.SSCYCLE.COM



When you stop and think about it, the trophies that company founder George Smith won at the race track in the late 1940's early 1950's were awards that really tell you what S&S is all about . . . Proven Performance.

Performance and Reliability

Everybody knows that S&S engines make a lot of power. What you may not be aware of is that because of our innovative designs and premium materials, they last a lot longer than you might think was possible for a high performance engine. Let's face it, the stroker engines of the late 1960's and early 1970's were pretty crude by today's standards, and they gave high performance motors a bad reputation as far as engine life is concerned. But keep in mind that the high performance industry has come a long way in the last 35 years or so, and S&S has been a leader in the quest not only for more power, but also for greater dependability and improved engine life. So if you could double your horsepower and still get near stock engine life, wouldn't that be a fair trade off? Judging from the number of large displacement S&S engines on the street, the answer seems to be "Yes!".

Certificate of Authenticity

Insist On The Real Deal!

Buying an assembled engine from S&S is the surest way to get S&S quality from start to finish. S&S parts and S&S expert assembly! But how do you know for sure that the engine you have was really assembled by S&S, and how do you know that all the parts in it are S&S? The answer is simple. All complete engines assembled by S&S come with a certificate of authenticity that lets you know that you have the real deal. Buyer beware of any engine that does not come with a certificate of authenticity. Insist on the real deal. Insist on a certified S&S assembled engine!

ORIGINAL DOCUMENT
S & S Cycle, Inc.
Complete Assembled Engine
S&S Cycle Inc. certifies that the engine described herein was assembled at the S&S Cycle manufacturing facility in Viola, WI, USA. This engine was shipped from S&S as a complete engine assembly and consists entirely of S&S components.
Date of Manufacture/Date Shipped 02/05/04
Engine Part Number 31-9523
Engine Description
Engine Style SSW+ Evolution Big Twin style '84-'99
Displacement 124 cid
Finish S&S polished finish
Compression Ratio 10.8:1
Camshaft Installed S&S 840 Cam
Fuel System S&S Super G carburetor
Ignition S&S IST Ignition
Sample
Engine Component Serial Numbers
Crankcases EE1234X
Cylinder heads BR549
Flywheel Assembly E01234-6SGX 1252P
Authorized Signature Brett G. Smith
Date 02/05/04
S&S Cycle, Inc.
14025 County Hwy G
Viola, WI 54664
VOID IF ALTERED OR ERASED
VOID WITHOUT WATERMARK OR IF ALTERED OR ERASED

Every complete engine assembled by S&S comes with a certificate of authenticity that looks like this sample. This is your assurance that the engine you have purchased contains only S&S components and was assembled by S&S technicians at the S&S facility in Viola, Wisconsin.

S&S Two Year Warranty on IST Equipped Engines

All S&S parts from a simple carb bracket to a complete engine, carry a one year warranty. The only exceptions to this are complete S&S engines sold with the S&S Intelligent Spark Technology (IST) ignition system (listed on the certificate of authenticity) which carry a two year warranty. We've doubled the warranty because we are confident that our knock sensing IST ignition will prevent damage to the engine from over revving during the break in period, in addition to protecting it from damage due to detonation.

The IST Guardian break in rev limit feature is activated on IST modules sold with Complete S&S Engines. This feature protects the new engine from premature failure with a lower rev limit during break in. As running time adds up, the module automatically increases the rev limit in four increments. It reaches the standard preset rev limit of 6,240 rpm after 24 hours of operation. After the break in period is complete, your S&S Dealer can change the rev limit to any desired value below the maximum of 6,240 rpm using the S&S IST Guardian software.

S&S Announces...

COMPLETE SHOVELHEAD STYLE ENGINE ASSEMBLIES!

With the addition of the new S&S billet Shovelhead style rocker boxes and tappet guides, along with new pushrods and forged roller rocker arms for Shovelheads, S&S can now offer complete Shovelhead style engines.

S&S Shovelhead style engines feature...

the finest parts on the market today. Start with the bullet proof crankcases, flywheels, cylinders, and heads that we have offered for years, and finish the engine with our new premium valve train components. S&S Billet gear cover, tappet guides, and rocker boxes look outstanding, and offer the kind of performance you have come to expect from an industry leader like S&S. What you can't see inside the engine is just as impressive. The new S&S Shovelhead style tappet guides are designed around the quiet, dependable Evolution style tappets. Corrected tappet guide bore geometry assures correct valve timing using Evolution style cams. The unique adjustable pushrods are collapsible for easy removal and installation, but are stronger than our old style adjustable pushrods. Inside the billet rocker covers are S&S's exclusive straight rocker shafts and the new S&S forged Shovelhead style roller rocker arms. The result is a Shovelhead engine with the kind of quiet power that some folks may just have a hard time believing.

The "Hog of Steel" was one of the first to get a complete S&S 93" Shovelhead style engine. SHOVELS RULE!

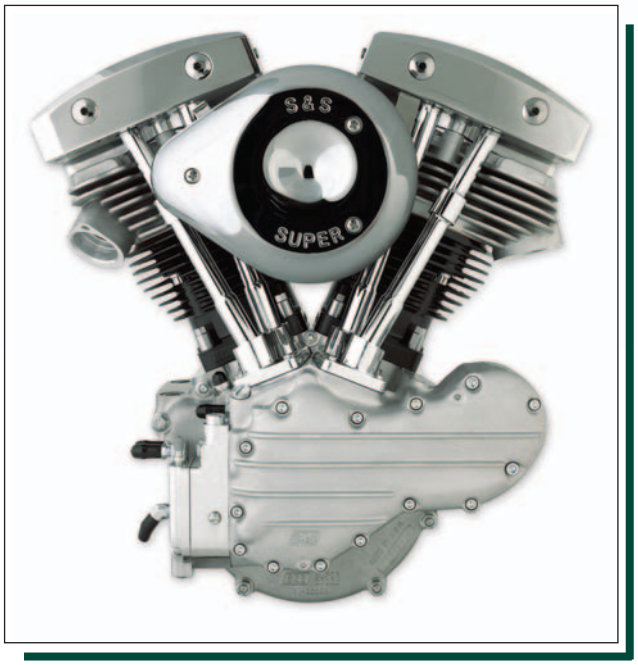
A new addition...

to the S&S Shovelhead family is the 93" Alternator/Generator engine. This is the perfect engine for that “Retro” chopper, but with a modern alternator charging system. In addition, the late style sprocket shaft used in this engine allows the use of late style transmissions for additional modern functionality. So when you take your chopper out for a late night cruise, and you want to see the road ahead as you click ‘er into 6th gear, this is the one.

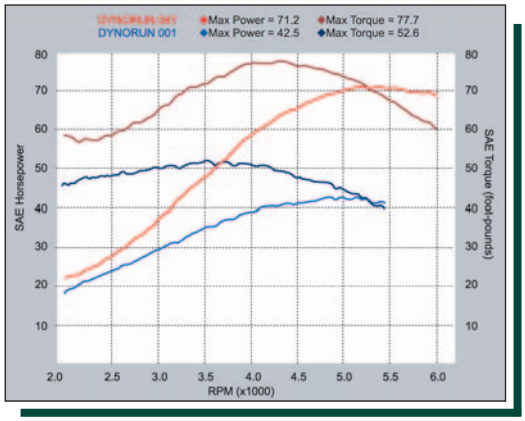
S&S Complete 80" Shovelhead Style Engine

Here at S&S we have a reputation for our big inch high performance engines, so we were somewhat surprised by the demand for stock displacement 80" Shovelhead style engines. The S&S 80" engine has long been a favorite with Shovel riders in spite of the fact that there have been larger engines available. The S&S cylinder heads, cam, and carburetor provide improved performance, but the combination of stock stroke and cast pistons make for an engine that will last as long as stock... maybe longer.

Includes S&S rocker covers, rocker arms, tappets, and tappet guides.



The Generator Shovelhead engine replaced the Panhead engine in 1966, and was only produced through 1969. Although the S&S Generator Shovel style engines have the classic stock appearance, the increased performance and the modern technology built into each one make them the obvious choice for upgrading performance in stock bikes or for building retro customs. Complete engines include all generator and timer drive gears. Reverse ignition drive gears are available for use with modern electronic ignitions. S&S billet rocker covers and tappet guides provide improved functionality as well as good looks.



This dyno chart shows an S&S 80" Shovelhead style engine compared to a stock 74" Shovelhead. The extra 6 cubic inches combined with S&S cylinder heads, cam, and Super E carburetor provide and extra 28horsepower and an extra 25 ft/lb of torque.

Dyno results from DynoJet 150 chassis dynamometer at S&S Cycle's Research and Development facility in Viola, WI.

Options Available – S&S 80

- Available assembled or unassembled.
- Cast or billet gear cover. (Alternator style only.)

Did you know?

It is a little known fact that in 1975, S&S Cycle built two 80" Shovelhead prototype engines for Harley-Davidson. Those engines worked so well that in 1978-'79 the 80" Shovel engine replaced the time honored "74" in all of Harley's Big Twin line.

S&S 80" Alternator Shovelhead Style Engine

1970-'84 Chassis **31-9760**

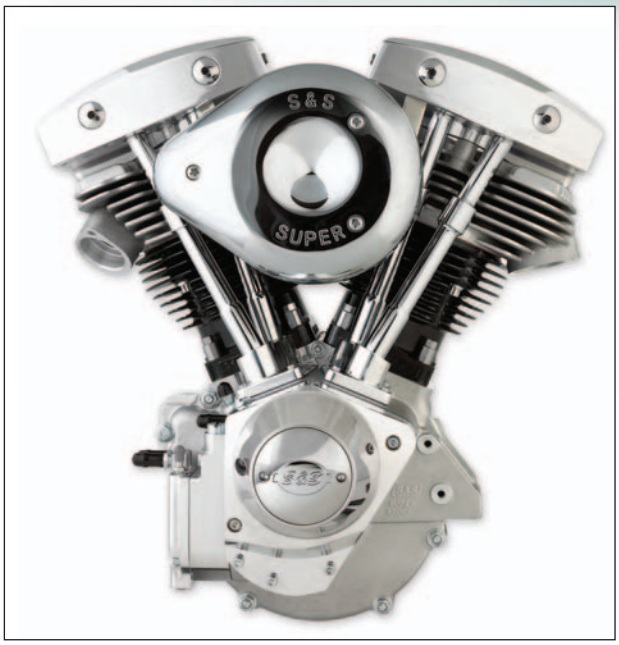
S&S 80" Generator Shovelhead Style Engine

1966-'69 Chassis **31-9765**

S&S Complete 93" Shovelhead Style Engine

The 93" S&S Sidewinder™ big bore stroker kit for Shovelheads has been one of the best selling Shovelhead performance upgrades since its introduction in 1977. So it came as no surprise when we started to build complete engines, that the 93" engine became by far the most popular in our line of Shovelhead style engines. An unbeatable combination of performance, engine life, and practicality make this the best choice for most of our customers. The 93 has the power for two up touring and trailer towing, and runs well on readily available pump gas because of the moderate compression ratio.

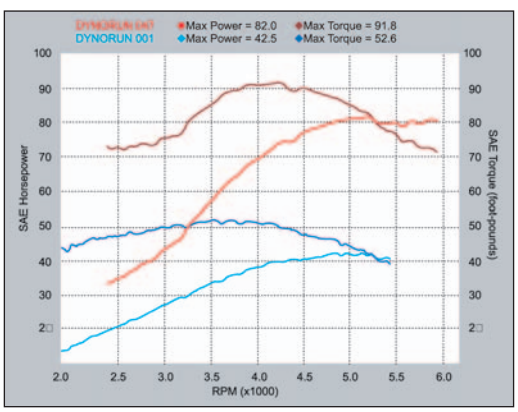
Includes S&S rocker covers, rocker arms, tappets, and tappet guides.



The Alternator Shovelhead engine was introduced in 1970 and was produced until 1984. S&S Alternator Shovel style engines have many modern features that make them more durable as well as more powerful than stock. Crankcases and cylinder heads are natural aluminum finish, and the high strength cast iron cylinders are protected by a tough black powdercoat. S&S billet tappet guides, gearcover, and rocker covers complete this engine in style.

Options Available – S&S 93

- Available assembled or unassembled.
- Cast or billet gear cover. (Alternator style only.)



This dyno chart shows an S&S 93" Shovelhead style engine compared to a stock 74" Shovelhead. The S&S 93 has nearly twice the power and torque of the stock engine.

Dyno results from DynoJet 150 chassis dynamometer at S&S Cycle's Research and Development facility in Viola, WI.

S&S 93" Alternator Shovelhead Style Engine

1970-'84 Chassis **31-9770**

S&S 93" Generator Shovelhead Style Engine

1966-'69 Chassis **31-9780**

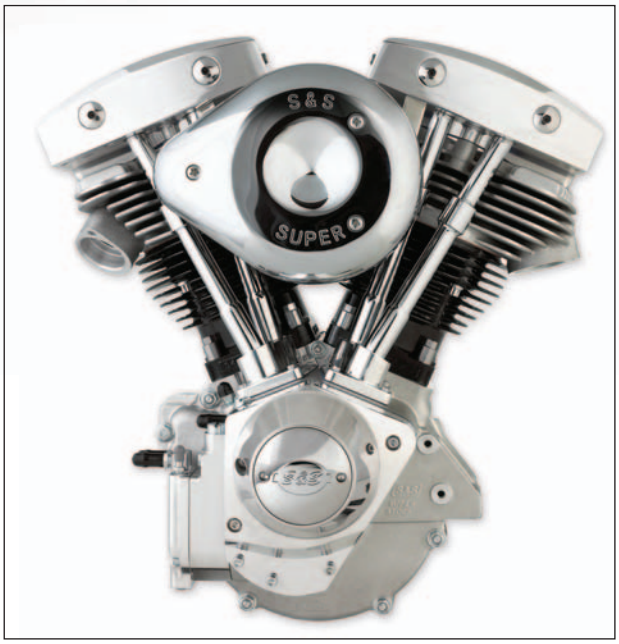
S&S 93 - 93" Shovelhead Style Engine Specifications

Bore	Stroke	Displacement	Camshaft	Piston Type	Compression Ratio
3⅝"	4½"	93"	S&S 585	S&S Cast	8.2:1
NOTE: This S&S Shovelhead style engine contains Evolution style cam and tappets.					

S&S Complete 93HC Shovelhead Style Engine

The 93 HC is a high compression version of the standard 93 that has a little nastier attitude. This engine is for the Shovel rider who wants more performance, and is willing to go through a little extra "care and feeding" required by a higher compression ratio. The forged pistons, higher compression ratio, and bigger cam give this engine a competitive advantage over the more docile standard 93. The dual plugged heads which are standard equipment on the 93 HC allow the use of premium pump gas with little or no problem with detonation or knock. This engine is recommended for lighter bikes in performance applications.

Includes S&S rocker covers, rocker arms, tappets, and tappet guides.



All S&S Alternator Shovel style engines are designed to allow the use of modern high output alternators. The S&S crankcases are significantly stronger than stock, but do not require clearancing to fit in stock frames. The looks of the billet tappet guides, ignition cover, and rocker boxes will knock your socks off!

Options Available – S&S 93HC

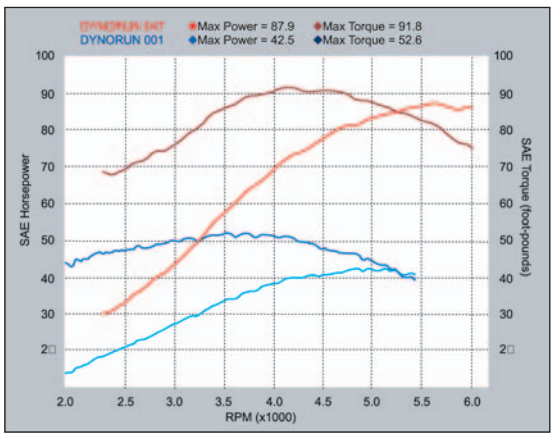
- Available assembled or unassembled.
- Cast or billet gear cover.

S&S 93" HC Alternator Shovelhead Style Engine

1970-'84 Chassis **31-9775**

S&S 93" HC Generator Shovelhead Style Engine

1966-'69 Chassis **31-9785**



The upper curves of this dyno chart shows an S&S 93 HC and the lower curves represent the stock 74" engine. The large displacement, higher compression and more aggressive cam timing of the S&S 93 HC produces more torque and horsepower, and makes the 93 HC capable of operating at higher rpm. The 93 HC is supplied with an S&S Super E carburetor because our tests show that it provides the best performance on the street. The larger Super G carb yielded slightly more horsepower at high rpm, but significantly less low and midrange torque.

Dyno results from DynoJet 150 chassis dynamometer at S&S Cycle's Research and Development facility in Viola, WI.

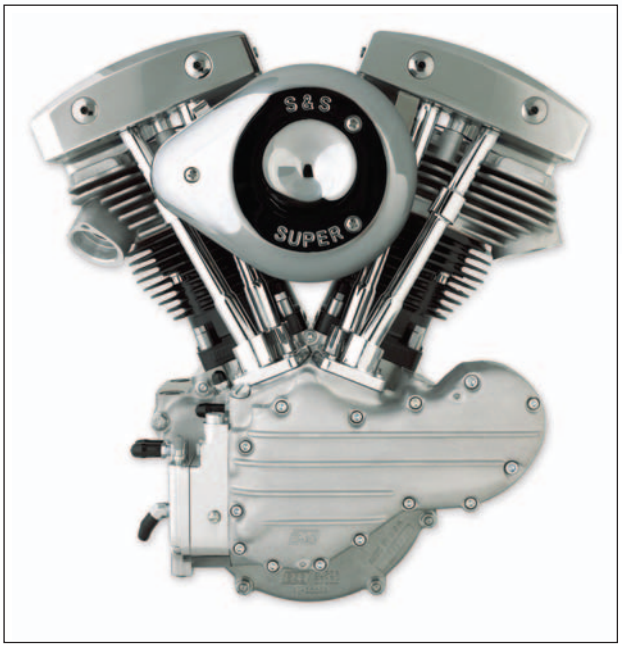
S&S Complete Alternator/Generator Shovel Style Engines

Retro Looks With Modern Dependability!

The look of a Generator Shovel engine is undeniably cool. It's a classic design that will endure, but there is no reason that you can't have that look, and have modern features as well. That's what the S&S Alternator/Generator engines are all about.

The most obvious advantage of an S&S Alternator/Generator engine is the alternator. There is no doubt that when the alternator electrical system was introduced in 1970, it was a giant step forward in capacity and dependability. Anyone who likes to use high-watt halogen headlights, or radios, or any of a long list of electrical accessories probably would not willingly go back to a generator charging system. It is also a fact that many electronic ignition systems don't function correctly if the battery is low. Any way you look at it the dependability and additional output of an alternator is a real plus. If a generator is not used on the engine, the generator location is an excellent place to mount a spin-on oil filter.

There are other advantages to be had as well. High performance clutches, five and six speed transmissions, and many more drive train products are readily available for an Alternator style engine... even one with a generator on the other side.



Note:
S&S Alternator/Generator engines require either a stock 1966-'69 style exhaust system, one of several aftermarket custom exhaust systems, or a custom fabricated exhaust pipe for a Generator Shovel engine.

S&S Alternator/Generator engines...

are built from the same high quality components as our other 93" Shovelhead style engines, and have the same specifications. There is no difference in performance or dependability. Both a high and low compression versions are available, and of course they all come complete with the new S&S billet rocker boxes and tappet guides. These engines contain Evolution style camshafts which are designed for a generator style crankcase. Although these engines contain timer drive gears designed for stock rotation, S&S has reverse rotation gears available for applications where electronic ignitions requiring opposite rotation are used.

S&S 93" Alternator/Generator Shovel Style Engines

Standard Compression Shovelhead Style Engine.....**31-9790**

High Compression Shovelhead Style Engine **31-9796**

S&S 93" Alternator/Generator Shovelhead Style Engine Specifications

	Bore	Stroke	Displacement	Camshaft	Piston Type	Compression Ratio
S&S 93	3⅝"	4½"	93"	S&S 585	S&S Cast	8.5:1
S&S 93HC	3⅝"	4½"	93"	S&S 600	S&S Forged	10:1

NOTE: These S&S Shovelhead style engines contain Evolution style cam and tappets.

84" Hot Set Up Kit
Stock Bore Stroker Hot Set Up Kit

For 1955-'65 Pans & 1966-'84 Shovels.

This kit is based on our extremely popular 84" stroker kit for Shovelheads. The 4½" stroke produces healthy increases in torque and horsepower with stock-like reliability at a very reasonable price. It requires no complicated machining and can be assembled by any experienced V-Twin engine builder. Detailed instructions are included with every kit.

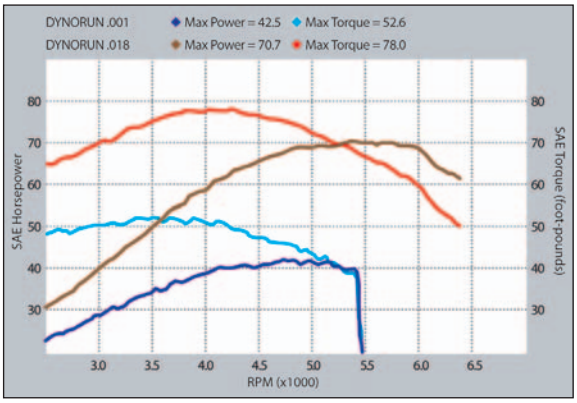
Hot Set Up 84 yields 84 cubic inches with an approximate compression ratio of 8:1 in Pans and 8.25:1 in Shovels.

84" Hot Set Up Kit Includes...

an 84" stroker kit with 4½" stroker flywheels assembled with mainshafts and rods, your choice of an S&S 450 or 514 cam kit, valve springs, adjustable chrome moly pushrods, a Super E carb kit, and installation instructions. Select correct kit for model year.

This kit requires special S&S pistons. Order the correct piston oversize from this chart.

92-2720 Series Pistons 84" Shovelhead	
Oversize	**Part Number**
Standard (74" Cylinders)	92-2720
+.010	92-2721
+.020	92-2722
+.030	92-2723
+.040	92-2724
+.050	92-2725
+.060	92-2726
+.070	92-2727
+.080	92-2728
+.090	92-2729
Cylinder & Piston Kit - 3⅞" Bore	91-9016
Cylinder & Piston Kit - 3½" Bore	91-9026



Dyno results from Dyno Jet 150 Chassis dynamometer at S&S Cycle's Research and Development facility in Viola, Wisconsin.

NOTE:
Pistons are sold separately.

92-2720 Series Piston

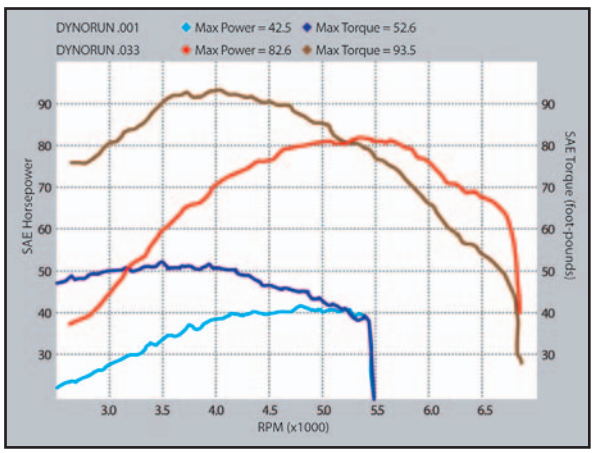
84" Stock Bore Hot Set Up Kits for Panheads & Shovelheads	
Model Year	**Part Number**
1955-'64	32-2284
1965	32-2285
1966-'69	32-2286
1970-'72	32-2287
1973-'77	32-2288
1978-'84	32-2289

93" Hot set up kit
Sidewinder Big Bore Stroker

For 1966-'84 Shovels.

The Hot Set Up 93 provides everything you need for a premium performance upgrade at a price that is competitive with a stock 74" or 80" inch rebuild. Since its introduction in 1977, the 93" Sidewinder™ has been one of our most popular combinations for performance-minded Shovelhead owners.

Hot Set Up 93 yields 93 cubic inches with an approximate compression ratio of 8.2:1.



Dyno results from Dyno Jet 150 Chassis dynamometer at S&S Cycle's Research and Development facility in Viola, Wisconsin.

Kit includes...

a 93" Sidewinder™ kit with 4½" stroker flywheels assembled with mainshafts and rods, 3⅝" bore cylinders and pistons complete, an S&S 514 cam kit, valve springs, adjustable chrome moly pushrods, a Super E carb kit, and installation instructions.

S&S 93" HOT SET UP KITS FOR 1966-'84 SHOVELHEADS	
Model Year	**Kit Number**
1966-'69	32-2265
1970-'72	32-2266
1973-'77	32-2267
1978-'84	32-2268

Finally, a cure for an age old problem!

These trick new stainless base nuts for Shovels feature a 7/16 hex combined with a shorter overall height. This allows full access with a box wrench or torque adaptor for proper tightening and torquing. These base nuts are included in all S&S Shovelhead Sidewinder™ kits.

NOTE: Requires .375" - .400" stud protrusion above base flange. Stud height may need to be adjusted.

(8 Pack) **93-3063**

Shovelhead Top End Kits

Restore that tired iron!

S&S has something for Shovelhead engines that have given many years of service and are now in need of a new top end. In a lot of cases it just isn't worth it to try to rebuild the old, cracked, worn out cylinder heads or to bore the stock cylinders again. S&S now offers Shovelhead style top end kits that provide everything you need to replace the top end of a 74" or 80" Shovelhead engine.

S&S top end kits for stock Shovelhead engines include everything needed to replace the top end. Kits also include manifold seals and clamps, not shown.

NOTE:

74" engines have a stroke of 3 31/32", and 80" Shovelhead engines have a 4¼" stroke, but the cylinder length for both engines is the same. The 74" piston is taller than the 80" piston which results in the same piston to head clearance in both engines. While it is possible to install an 80" top end on a 74" engine, this will result in very low compression and poor performance. A 74" top end will bolt to an 80" crankcase, but, the pistons will contact the cylinder head due to the combination of the taller 74" pistons and the longer stroke of the 80" flywheels. Therefore, it is important to correctly identify the stroke of the engine before ordering a top end kit.

S&S Shovelhead top end kits...

include a set of S&S Shovelhead style cylinder heads, a pair of S&S stock bore cylinders (3 7/16" for 74" and 3½" for 80"), S&S cast 8:1 compression pistons complete with rings and wristpins, manifold clamps, manifold seals, all required hardware, and gaskets.

The 74" top end kits

include S&S 92-2500 series 3 31/32" stroke pistons and o-ring style cylinder heads. Top end kits for 80" engines include the S&S 92-2600 series 4¼" stroke pistons and rubber band style cylinder heads. Pistons are pre-fit to the cylinders, so there is no machine work to be done and very little down time. Just build your engine!

Shovelhead Top End Kits

74" Top End Kit

1966-'78, 3 31/32" Stroke
8:1 Compression
.....**90-0097**

80" Top End Kit

1979-'84, 4 1/4" Stroke
8:1 Compression
.....**90-0098**

S&S Cylinders for Shovelheads
Stock Bore and 3⅝" Big Bore

We've Been Doing This For A While!

S&S has been making 3⅝" bore cylinders for Shovelheads since 1976, the bicentennial year which marked 200 years of independence for the United States of America. In honor of that occasion, the cylinders were called Sidewinders™, referring to the "Don't Tread On Me" rattlesnake on the original Gadsden flag. To this day we refer to our big bore kits as Sidewinder™ kits. Since then we have incorporated our Sidewinder™ kits into our line of engines, and we have added stock bore Shovelhead style cylinders to the S&S product line.

Hesitant To Use Aftermarket Cylinders?

Perhaps you have heard stories about Shovelhead engines with aftermarket cylinders literally coming apart and causing very expensive damage to the engine, frame, and even the rider? Those stories are actually the reason why S&S began selling stock bore Shovelhead style cylinders. We received numerous requests for high quality replacement cylinders that customers could use to rebuild Shovelhead engines with confidence. We responded with S&S stock bore cylinders for 74" and 80" Shovels. Like our Sidewinder™ big bore cylinders, S&S stock bore cylinders are machined from U.S. made, engineering grade, Class - 40 gray iron castings. This material is guaranteed to have a wear resistant pearlitic matrix and tensile strength of at least 40,000 psi. The result is a cylinder that "wears like a pig's nose" and will not break! In addition to the strength provided by the superior material, S&S cylinders are stronger by design. Thicker sections in critical areas and more fin surface area make for super strong cylinders that cool better than stock. As if that weren't enough, the durable black powdercoat finish looks great.

NOTE:

Due to increased wall thickness of the S&S cylinders, special S&S head bolts must be used with all S&S Shovelhead style cylinders to avoid clearance problems. S&S 3⅜" Shovel style cylinders also require the use of S&S or similar small diameter base nuts. (See below.)

Shovelhead Style Cylinders							
Bore	**3 7/16"**	**3½"**	**3⅝"**	**3⅝"**	**3⅝"**	**3⅝"**	**3⅝"**
Cylinder Length	5.330"	5.330"	5.330"	5.405"	5.440"	5.530"	5.630"
Typical Displacement	74"	80"	88"	93"	96"	98"	103"
Cylinders Kits	91-9011	91-9021	91-9000	91-9100	91-9400	91-9200	91-9300

Need Pistons?

See your S&S Dealer for replacement pistons for stock bore or 3⅜" Shovelhead Engines.

S&S Shovelhead Style Cylinder Gaskets		
Gastet Type	**3 7/16" " & 3½" Bore**	**3⅝" Bore**
Head Gaskets (10 pack)	93-1061	93-1062
Base Gaskets (10 pack)	93-1070	93-1069
Exhaust Gaskets (10 pack)	93-1075	93-1075

Hardware for Shovelhead Engines

S&S Stainless Steel Base Nuts* 7/16" Hex (8 Pack).....**93-3063**

S&S Stainless Steel Head Bolts – 1 Each (Order 10 per Motor).....**93-3024**

Oil Hole Lowering Sleeves - For Stock Bore Stroker Engines (10 Pack).....**93-1076**

* May require adjustment of cylinder stud height.

S&S Sidewinder™ Big Bore and Stock Bore Stroker Kits

S&S stock bore stroker kits, Sidewinder™ 3⅝" big bore kits , and Super Sidewinder™ 4" big bore kits are designed to increase the displacement of an existing stock engine. More cubic inches means more power but in addition to horsepower gains, reliability, ease of installation, and compatibility with stock components are also important considerations to our customers. With an S&S kit, you can build a performance street engine with confidence. Our years of experience add up to proven performance.

Shown here is the 93" Shovelhead Big Twin Kit. Typical Sidewinder™ stroker kits include everything necessary for a complete installation. Options available allow you to custom tailor the kit to your needs. **91-9105**

For all OHV Big Twins and Sportsters.

The easiest, most cost effective way to increase the performance of your Harley.

- Increased displacement for better performance.
- Maximum running life through innovative design features and premium materials.
- Flexibility for a variety of performance needs.
- Minimal installation problems.

Kit Selections

There is kit available to match nearly any riding style—for touring, riding double, sidecar or trailer operation, and drag strip.

- Shovels from 74" to 103"
- Knuckles and Pans from 74" to 88"

Selection Considerations:

- Lower compression kits will tolerate lower quality gasoline and generally last longer than higher compression kits.
- Cast pistons generally allow tighter running clearances for extended life and quieter operation.
- Forged pistons are noted for strength and durability in high performance applications.
- Engine Size - Smaller displacements retain stock-like engine life while providing significant additional horsepower. Larger, higher compression kits provide greater horsepower gains with some reduction of engine life.

Stock Compatibility

- Oil feed and oil return systems to and from heads match the stock systems.
- The head bolt and base nut patterns on 1936-'84 Big Twins are the same as stock to eliminate additional machining steps.
- All kits are made to work with stock components and come complete so it is not necessary to buy other aftermarket parts.
- An almost deceptive stock-like appearance!

Ease of Installation:

- All kits can be installed by any H-D repair shop doing engine rebuilding who has access to a boring bar, no sophisticated machine shop facilities are required.
- Most kits come complete with all parts necessary to make the conversion

Continued...

S&S Sidewinder Big Bore and Stock Bore Stroker Kits

S&S Sidewinder™ Big Bore and Stock Bore Stroker Kits

General Information

The S&S stock bore stroker kits described and pictured in this section are available for Knucklehead, Panhead, Shovelhead engines. S&S big bore Sidewinder™ kits are available for Shovelhead engines. All kits include complete installation instructions which detail the model-specific modifications sometimes required. Additional information pertaining to basic engine assembly procedures and recommended running clearances is available in the appropriate Harley-Davidson® Factory Service Manual.

Twin Cam stock bore stroker kit shown here is only available with assembled flywheels. Pistons must be purchased separately. **32-2490**

Assembling an S&S Stroker or Sidewinder™...

engine is straight forward and little different than assembling a stock engine. The few modifications required are very basic and within the scope of most professional engine builders. Installation of an S&S stock bore stroker kit or Sidewinder™ kit is, for the most part, no more difficult than rebuilding a stock engine. The only major modification required to install a Sidewinder™ kit in a Twin Cam or Evolution engine is that the crankcase be bored to accept the larger diameter cylinder base spigots. Shovel Sidewinders™ also require that a similar procedure be done to the heads for the larger diameter fire ring. Both modifications can be performed on most boring bars by using special S&S machining fixtures. (See your dealer for more information.)

Making It All Work...

Sidewinder™ and stroker kits create large displacement engines which can be difficult to start. This should be kept in mind when considering one of these kits. Using an appropriate cam with longer duration, and later intake closing time to reduce cranking compression will make starting easier. Not only will the appropriate cam make starting easier, but it is necessary in order for the engine to achieve its full potential. We urge you to consider purchasing an S&S Hot Set Up Kit that includes the recommended camshaft. (See pages 8 and 10 of this catalog for Hot Set Up Kits or page 37 for help with camshaft selection.)

A number of options make it easy...

to build big bore and stroker engines to achieve your specific goals.

- Do your own flywheel assembly and balancing or allow S&S to do it for you.
- These kits are available with or without sprocket and pinion shafts and are shipped unassembled or completely assembled and ready to install into the cases.

NOTE:
Pistons are sold separately.

SHOVEL, PAN, KNUCKLE STOCK BORE STROKER KITS

Displacement Ratio	Stroke	Bore	Compression Ratio	Piston Type	Piston Series	Piston Page #	Application	Engine Life	Kit Part Number	EXTRA COST OPTIONS: Pinion Shaft	Sprocket Shaft	Connecting Rod Assembly	Flywheels Assembled
84"	4½"	3⅞"	8.25:1	Cast	92-2720	P. 38	Extended use, trips, etc.	Excellent	32-2784	●	●	●	●
			9.75:1	Forged	92-2800	P. 39	Extended use, trips, etc.	Excellent	32-2884	●	●	●	●
86"	4⅝"	3⅞"	8.5:1*	Cast	92-2730	P. 38	Trips, occasional strip	Very Good	32-2786	●	●	●	●
			8:1	Forged	92-2900	P. 40	Short trips, street-strip	Very Good	32-2986	●	●	●	●
88"	4¾"	3⅞"	9.25:1	Forged	92-2900	P. 40	Street, strip	Fair	32-2988	●	●	●	●

NOTES: * Includes .032" base plates.

SHOVELHEAD BIG BORE SIDEWINDER™ KITS

S&S offers 3⅝" bore Shovelhead Sidewinder™ Kits with displacements from 88" to 105". The 88" Sidewinder™ kits 91-9001 and 91-9002 are top end kits designed to be used with stock 80" flywheels with 4¼" stroke. All other Sidewinder™ kits include the stroker flywheels required to achieve the specified displacement. Pinion shaft, sprocket shaft, connecting rods, and assembly of the flywheels are options available at an extra cost.

Shown here is the 93" Shovelhead Big Twin Kit with assembled flywheel option. Typical Sidewinder™ stroker kits include everything necessary for a complete installation. Options available allow you to custom tailor the kit to your needs. **91-9105**

NOTE:
Stock crankcases must be bored to accept big bore Sidewinder™ cylinders.

SHOVELHEAD BIG BORE TOP END KIT SUMMARY CHART

Displacement	Stroke	Bore	Compression Ratio	Piston Type	Cylinder Length	Application	Engine Life	Kit Part Number
88"	4¼"	3⅝"	7.3:1	C	Stock	Riding double, touring, etc.	Almost stock-like	**91-9001**
			8:1	F	Stock	Riding double, touring, etc.	Almost stock-like	**91-9002**

NOTES: Top end only. - Use with stock 80" 4¼ stroke flywheels. (Flywheels must be rebalanced.)

SHOVELHEAD BIG BORE SIDEWINDER™ KIT SUMMARY CHART

Displacement	Stroke	Bore	Compression Ratio	Piston Type	Cylinder Length	Application	Engine Life	Kit Part Number
88"	4¼"	3⅝"	7.3:1	C	Stock	Riding Double, Touring, Etc.	Almost Sotck-Like	**91-9003**
			8:1	F	Stock	Riding Double, Touring, Etc.	Almost Stock-Like	**91-9005**
93"	4½"	3⅝"	8.2:1	C	+.075	Riding Double, Touring, Etc.	Very Good	**91-9105**
			9.1:1/9.8:1*	F	+.075/030"	Riding Double, Touring, Etc.	Good	**91-9106**
96"	4⅝"	3⅝"	8.6:1	C	+.110"	Street & Strip	Good to Fair	**91-9209**
			9.8:1	F	+.110"	Street & Strip	Good to Fair	**91-9212**
98"	4¾"	3⅝"	8.6:1	C	+.200"	Street & Strip	Poor to Fair	**91-9210**
			9.6:1	F	+.200"	Street & Strip	Poor to Fair	**91-9213**
103"	5"	3⅝"	9.5:1	C	+.300"	Little street, Mostly Strip	Poor	**91-9305**
			10.9:1	F	+.300"	Little street, Mostly Strip	Poor	**91-9306**

NOTES: * Choose compression when order is placed.

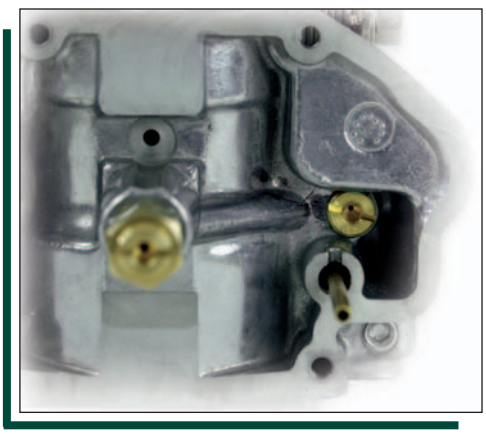
Half a million and still going strong. . .

The S&S Super E & G Carbs...

were a ground breaking development when they were first introduced in October of 1990. Since then they have become the best selling performance carburetor in the V-Twin aftermarket, and have remained so to this day – in mid 2004, S&S produced the 500,000th Super Shorty carb. The combination of good looks, easy tuning, exceptional performance, and not least of all the technical support of a manufacturer with as many years of experience as S&S, made the S&S Super Shorty carbs the ones to get. Today the Super E and G carbs are still top selling carburetors, and are standard equipment on all S&S engines (another best selling product).

So how do you improve on that?

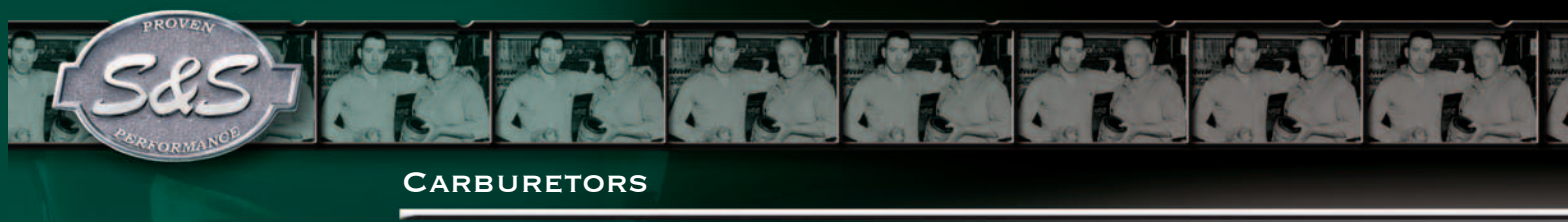
A fairly simple design change has given the Super Shorty carbs an even higher degree of tunability, which improves compatibility with some of the more radical cams and exhaust systems. For the vast majority of our customers, this new design will not change the way they dial in our carbs, but for our customers who use extreme cams and exhaust systems, designed for maximum performance, the change will make life a lot easier.



The new replaceable main system air bleed, accepts readily available S&S main jets which allows a wide range of adjustment. Installing a larger air bleed jet causes the main jet to "come in" at a higher rpm, and can help eliminate the transient midrange rich condition when tuning engines with radical cams and exhaust systems.

How does it work?

The design change involves the main fuel circuit air bleed. In the past, S&S Shorty carburetors have had a fixed air bleed for the main circuit that was sized for the best all around performance. However, starting October 1, 2003, all Super E and G carbs have a replaceable jet in place of the fixed main circuit air bleed. This allows for fine tuning of the main circuit. The main circuit air bleed determines the rpm at which the main fuel circuit begins to feed fuel. A smaller air bleed will cause the main circuit to "come in" at a lower rpm. A larger air bleed causes the main jet to come in at a higher rpm. The air bleed installed at the factory is the same size as we have always used because it works best in the majority of applications. However, the ability to change the size of the air bleed can be very useful when tuning engines with high performance exhaust systems, which often, exhibit some harmonic reversion problems. Harmonic reversion usually inhibits exhaust flow at a specific rpm. In extreme cases, aggravated by very aggressive cam timing, the reversion pulses can actually push air back out of the intake valve. This pulse of air picks up fuel as it goes out past the main discharge tube of the carburetor, and is then drawn back through the carburetor where it picks up additional fuel. This causes a transient rich condition at that specific rpm. Since this usually occurs at the same rpm at which the main circuit comes in, the rich condition can often be reduced, and midrange performance improved, by making the main jet come in at a slightly higher rpm. This can be done by installing a larger main circuit air bleed jet.



Continued...
S&S Super E & G Carburetors

Do I Need a Super E or Super G Carburetor?

As a general rule we recommend a Super E carb for street engines up to about 100 cubic inches in displacement. The Super E's smaller 1⅞" (47.6mm) bore size creates higher air velocity, which results in better low and midrange response and power. The Super G is recommended for street engines of no less than 90 cubic inch displacement. However, in spite of the fact that the Super G's larger 2 1/16" (52.3mm) bore size allows more air to pass, and generally provides more peak horsepower, slower air velocity at lower rpm causes poor throttle response and weaker midrange torque in engines under 100 cubic inches. For the vast majority of street engines in the 90-100 cubic inch displacement range we strongly recommend the Super E because of the improved low and midrange response. However, if maximum peak horsepower is the most important consideration, a Super G carb would be appropriate.

What makes the S&S Super E & G so popular?

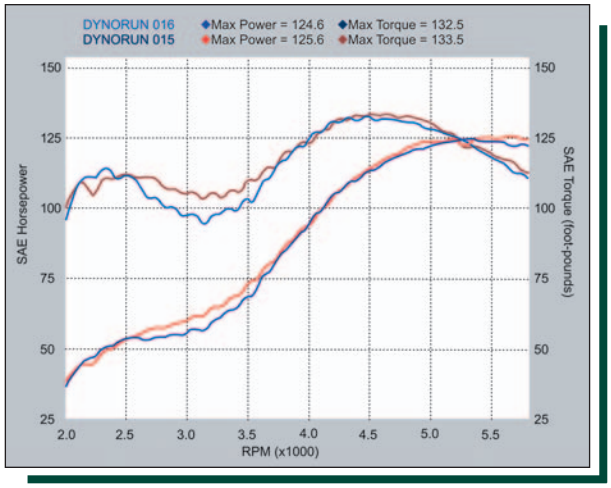
The popularity of the S&S Super E & G "Shorty" carburetors is largely because of results. Ease of installation, easy tuning, excellent performance, and the technical support of a company with over 45 years of experience in the high performance V-Twin industry are all factors in the popularity of the Super "Shorty" carbs. It can be best summed up by the S&S company motto: "Proven Performance".

Easy Installation

Installation is easy because carbs are sold in complete kits that contain everything needed to install the carb on the specified model motorcycle. All kits include a comprehensive, step by step installation instruction booklet and tuning guide that takes the "rocket science" out of installation and tuning.

Compatible with Stock Throttle Cables On All Late Model Big Twins

For the sake of safety, all S&S carbs are designed to use a two cable pull open/pull closed throttle system. Super "Shorty" carbs for Big Twins are compatible with stock 1981 and later throttle cables. See your S&S Dealer for throttle conversion kits for earlier models with single cable throttle controls.

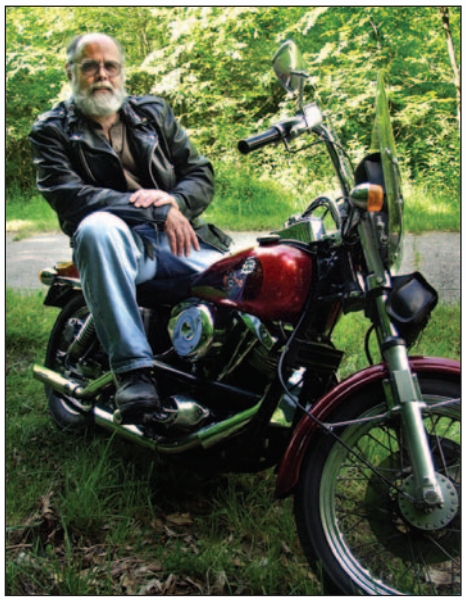


Tune for those Drag Pipes!

This dyno chart shows two runs on a 124" SSW+ engine with a Super G carb and 2" drag pipes. The two runs are very similar except in the 2500 to 3500 rpm range. One run shows approximately 10 ft/lb more torque in this range than the other. The curve with increased torque was the result of replacing the standard .040" main circuit air bleed with a larger bleed. Note that the maximum torque and horsepower was not changed significantly. However, the additional 10 ft/lb of midrange torque will make this motorcycle feel much more responsive and powerful on the street since this is the rpm range most used in street applications.

Dyno results from Dyno Jet 150 Chassis dynamometer at S&S Cycle's Research and Development facility in Viola, Wisconsin.

Continued...
S&S Super E & G Carburetors



A recent survey in Sturgis SD showed that the majority of Shovelheads counted were equipped with S&S Super E carbs. The next time you see a Shovel cruise by, check it out. Chances are there will be an S&S carb on it.

S&S "Shorty" Carbs...Easy Tuning

The S&S "Shorty" carbs are easy to tune due to the simplicity of the functional design. The Super E & G's are butterfly style carbs and have only two fuel circuits, not counting the starting system or accelerator pump. In addition, idle mixture, idle speed, and accelerator pump adjustments are easily accessible when the carburetor is installed on a motorcycle.

The low speed circuit which handles engine speeds from idle up to about 2500 rpm, is controlled by a changeable intermediate jet which meters fuel to the intermediate system as well as the idle mixture control needle. The intermediate jet is selected to provide the best performance and fuel economy in the lower rpm range, and the idle mixture screw allows for precise adjustment of the air/fuel mixture at idle. The adjustable accelerator pump eliminates off idle hesitation and can be adjusted to provide the correct amount of fuel for a wide variety of engine displacements and styles. The accelerator pump is also very useful as a starting aid.

The main, or high speed system features a replaceable main jet, and in carbs manufactured after 10-1-03, a replaceable main circuit air bleed. The main jet meters fuel for high rpm and full throttle conditions, while the air bleed can be used to control the rpm at which the main system comes into play. Adjustment of the air bleed is normally not needed with standard engine configurations, but can be very useful when tuning engines with radical cams and exhaust systems.

Performance by Design

The S&S "Shorty" carbs do not use a traditional choke plate for starting enrichment. Instead a separate adjustable enrichment circuit is used for cold starts. The enrichment circuit is activated by pulling the enrichment lever on the air cleaner to the up position. Once the engine starts, the lever can be moved downward to function as an adjustable fast idle to keep a cold engine running until the bike is underway or the engine is warm enough to idle normally. By using an enrichment circuit instead of the usual choke mechanism, the bore of the carburetor is not restricted by hardware that is only used on cold starts. That means that the carb can supply more air to the engine at full throttle, and that equates to more power.

Another reason the "Shorty" carbs are capable of making more power is the design of the air cleaner. This design takes into account two of the most significant factors that can improve air flow into a carburetor. The most important factor is a filter element that does not restrict the flow of air, and almost as important is the elimination of turbulence at the inlet of the carburetor.

The filter area of the "Shorty" carbs is maximized by an ingenious backplate design that wraps slightly around the carb to allow room for a wider filter element than a straight back plate would allow. The pleated S&S filter element looks like paper, but is actually a special resin impregnated cellulose fiber media that provides excellent filtration as well as superior flow. That makes for improved performance and better engine protection.

Reducing turbulence is almost as important as finding a filter media that allows air to pass with a minimum of restriction. The shape of the S&S air cleaner backplate provides a radiused inlet similar to an air horn or velocity stack. This provides a smooth path for air to follow while traveling into the carburetor inlet. This results in less turbulence which allows more air to flow into the carb. The flow of air is also enhanced by a directional cone inside the air cleaner cover which also directs the air smoothly into the inlet of the carburetor. Since the radiused inlet and directional cone are contained within the filter element, air flowing into the carb is not effected by turbulent air flowing past the carburetor when the motorcycle is traveling at high speeds. So the air cleaner cover and the filter element also play an important role in eliminating turbulence and increasing flow.

While installing an S&S Super E or G carburetor on a stock engine will result in more power, the addition of a performance cam and exhaust system will result in even more power gains. Take a look at the S&S Hot Set Up kits on page 8 of this catalog for more information.

Continued...

S&S Super E & G Carburetors

Complete S&S Super E & G Carburetor Kits

These S&S Super E & G carburetor kits contain everything you need for a complete installation.

1979-'82 Big Twin Super E Carb Kit 11-0403

NOTE:

These kits contain manifolds for engines with stock length cylinders. For engines with non-stock cylinder length – order a carb kit without a manifold and order the correct length of manifold separately.

Super E & Super G Carburetor Kits Complete Selection Chart

Application	Year & Type of Engine	Super E Carb Kits		Super G Carb Kits	
		Carb Kit Standard	Carb Kit for 5 Gallon Tank	Carb Kit Standard	Carb Kit for 5 Gallon Tank
Panhead	1955-'65 BT *	11-0401	11-0401		
Shovelhead	1966-'78 BT	11-0402	11-0418§	11-0422	11-0438§
	1979-'84 BT	11-0411	11-0418§	11-0431	11-0438§

• May be used for Knucklehead and early Panhead engines if "plumber" style heads are converted to accept an o-ring style manifold.

§ Shovelhead engines equipped with .075" longer than stock cylinders in chassis with five gallon gas tanks require additional air cleaner cover to gas tank clearance. Kits in this column include an air cleaner cover clearanced to fit these engines. Manifold and mounting hardware must be purchased separately.

NOTES:

- Stock motorcycles 1980 or earlier must be updated to a two cable pull open/pull closed throttle control system. A single cable pull open system cannot pull the throttle closed in case the throttle should accidentally stick in the open position. S&S offers high quality throttle cable kits in several lengths for this purpose. A press on sleeve is also available to increase the diameter of the throttle grip area of 1972 and earlier handle bars to 1" to allow installation of modern throttle assemblies. See your S&S Dealer for more information.
- S&S "Shorty" carburetors will not fit Ironhead Sportsters with vertical magnetos due to clearance problems between the magneto and the carburetor.
- Shovelheads with five gallon gas tanks and cylinders that are taller than stock require a special notched air cleaner cover to clear the gas tank. Since these taller engines also require a special length manifold, select a carb with a notched air cleaner cover but without a manifold from the chart on above. See your local S&S Dealer to order the correct Shovelhead style manifold.
- S&S does not recommend polishing or chrome plating Super E & G carburetors. Our repair department has seen many carbs with passages plugged with polishing compounds, and some carbs that had been destroyed because the polishing or chrome plating had altered critical machined surfaces.
- Recommended for racing only – S&S Super E & G carburetors are not legal for use on motor vehicles operated on public highways in the state of California, or in other states where similar pollution laws may apply. The user shall determine the suitability of the product for his or her use and shall assume all risk and liability in connection therewith.

S&S Super B Carburetors

Since its introduction in 1975 the 1⅞" S&S Super B carb has been a favorite of Harley high-performance enthusiasts the world over. It has under gone a few changes over the years, but it is still true to the original idea. A simple, no frills, high-performance carb that works well on the street and the drag strip.

Super B Carburetor Kit 11-0103

Applications:

- The S&S Super B gas carburetor has a 1⅞" throat and is recommended for use on any displacement H-D Big Twin or Sportster engine with any degree of performance modifications. This includes stock engines and as well as performance engines.
- Super B carb kits are not available for 1991-later Sportsters, 1992-later Big Twin, or Twin Cam 88 engines.

Notes:

- Two Cable Throttle Required – S&S Super B carburetors require the use of a two cable, pull open-pull closed throttle assembly. Any chassis including 1980 and earlier stock H-D models equipped with a single cable throttle mechanism requires pull open-pull closed type. S&S offers a high quality two cable throttle assembly for this purpose. (See your local S&S Dealer for more information.) Stock models from 1981 to present have a two cable throttle which can easily be modified to work with the Super B carburetor.
- Recommended for Racing Only – S&S carburetors are not legal for use in California on motor vehicles operated on public highways or in other states where similar pollution laws may apply. The user shall determine the suitability of the product for his or her use and shall assume all risk and liability in connection therewith.
- Polishing and Chrome Plating the Carburetor – S&S does not recommend polishing and chrome plating any S&S carburetor. Proper preparation to achieve a good finish requires polishing using buffing compounds. The polishing and plating processes and the materials used invariably plug air and/or fuel passageways and feed holes and alter operating tolerances in critical areas regardless of the precautions taken.

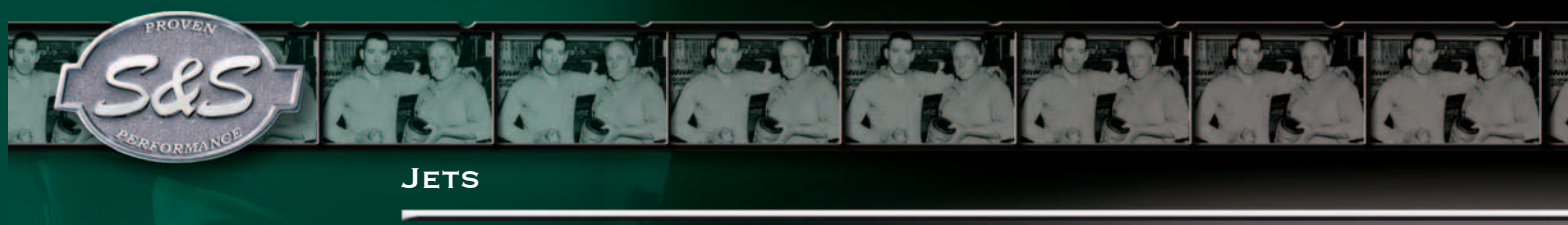
S&S Super B complete gas carburetor kits...

include an S&S Super B gas carburetor, an S&S Teardrop air cleaner kit, manifold, mounting hardware, fuel line and clamps, two extra main jets, and installation and jetting instructions.

SUPER B CARBURETOR KITS		
Application	**Year & Type of Engine**	**Carb Kit**
Big Twin	1955-'65 Knuckle/Pan	11-0101
	1966-'78 Shovel	11-0102
	1979-'84 Shovel	11-0411
No Manifold	Carb only	11-0111
	Carb kit w/o manifold	11-0100

Note:

Many 1979-'80 engines may be equipped with either o-ring or band style heads. Check before ordering.



S&S Carburetor Replacement Jets

For those who need to rejet their carburetor because of engine modifications, exhaust modifications, or changes in altitude, we have extra jet kits available which are designed to cover most jetting situations. Compare your jets with those in the pictures to determine the proper jet series. The description given tells what carburetors it fits and the sizes available. Also listed are the various groups of sizes offered and their respective part numbers.

Riders & Tuners

It is often difficult to know exactly what jetting combination is best for a particular engine without actually trying it. That is why S&S offers jet packs with a range of jets that gives the tuner the flexibility to try different jetting combinations to achieve the best performance.

For even more jetting options S&S offers high range, low range, and master jet packs for the professional tuner.

Low Range Jet Pack

For jetting most stock and moderate performance engines. – Includes 1 each intermediate jets (.025", .0265", .028", .0295") and 1 each main jets (.062", .064", .066", .068", .070", .072", .074").
.....**11-7270**

High Range Jet Pack

For jetting some stock and all performance engines. – Includes 1 each intermediate jets (.0295", .031", .032", .033") and 1 each main jets (.072", .074", .076", .078", .080", .082", .084").
.....**11-7271**

Intermediate Jets

Series #94 fits all Super 1⅞", 2⅛", 2¼" gas carburetors–sizes available: .025", .0265", .028", .0295", .031", .032", .033", .036", .040".

Sold in packages of 3 jets.

1 each .025", .0265", .028".....**11-7100**
1 each .0265", .028", .0295".....**11-7101**
1 each .028", .0295", .031".....**11-7102**
1 each .0295", .031", .032".....**11-7103**
1 each .031", .032", .033".....**11-7104**
1 each .032",.033", .036".....**11-7105**
1 each .033", .036", .040".....**11-7106**

Master Jet Pack

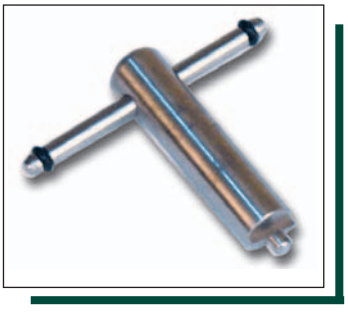
For jetting all Super B, E, and G equipped engines. – Includes 1 each intermediate jets (.025", .0265", .028", .0295", .031", .032", .033") and 1 each main jets (.062", .064", .066", .068", .070", .072", .074", .076", .078", .080", .082", .084").
.....**11-7272**

Main Jets

Series #72 fits all Super 1⅞", 2⅛", 2¼" gas carburetors – sizes available: .040" to .108" (in increments of .002").

Sold in packages of 3 to 6 jets.

1 each .062", .064", .066", .068", .070", .072"
.....**11-7200**
1 each .066", .068", .070", .072", .074", .076"
.....**11-7201**
1 each .072", .074", .076", .078", .080", .082"
.....**11-7202**
1 each .078", .080", .082", .084", .086", .088"
.....**11-7203**
1 each .090", .092", .094", .096", .098"
.....**11-7204**
1 each .100", .102", .104", .106", .108"
.....**11-7205**



Main Jet Tool

For changing series #72 main jets
.....**53-0452**

Something special for the world's most famous V-Twin carburetor!

Made in America. Three words that speak volumes about a product and its buyer. The heavyweight motorcycle cruiser phenomenon has its roots and its home right here in this great country. The passion and fulfillment it offers have been exported and copied by all and sundry but the genuine motorcycle cruising experience is still American at its heart.

S&S "Patriot" Flag Air Cleaner Cover

There are only a handful of companies that have been around long enough to claim to have helped shape the industry and lifestyle that is so popular around the world today. One, of course makes motorcycles in Milwaukee. Another is S&S Cycle, Inc.

Founded in 1958, S&S has been building high performance engines and engine components for the heavyweight cruiser market without interruption for over 45 years. Quality, performance, and dependability are the values that S&S is famous for and the legendary S&S Teardrop air cleaner cover is a symbol to all that its owner feels the same way we do, second best is not good enough.

To celebrate the rich heritage of S&S and its place in the American motorcycle industry, we are offering for a limited time only this "Patriot" version of the famous Teardrop air cleaner cover. An American flag on an American carburetor on an American motorcyle.

Patriot Air Cleaner Cover 17-0385

Desperado Air Cleaner Cover 17-0004

S&S "Desperado" Air Cleaner Cover

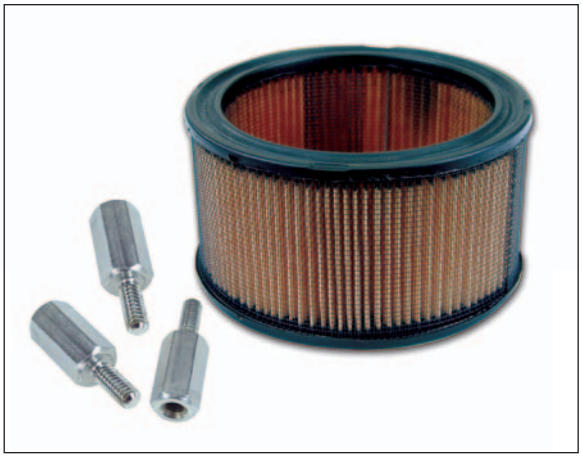
A second design, the "Desperado", is also now available. The Desperado had its beginnings in much more down-to-earth circumstances. While developing the new Super Sidewinder™ Plus series of engines we found that their increased performance called for a better breathing intake tract and of course the air cleaner cover is the first part in that tract. During dyno testing, a 1-2 horsepower gain was realized and, as with the Patriot air cleaner cover, it does not require any jetting changes to a properly jetted carburetor. Good looks and better performance.

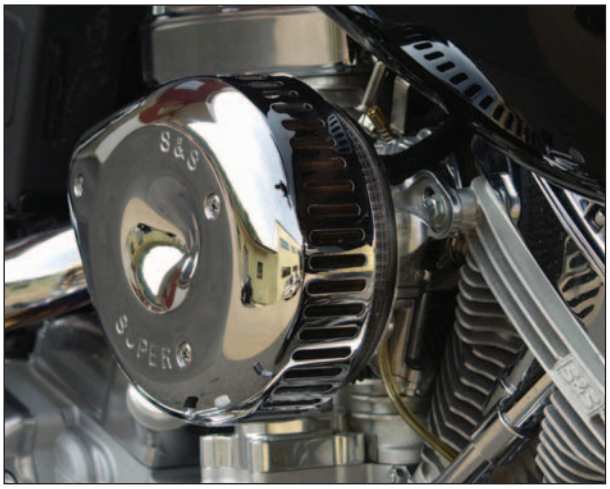
Patriot and Desperado air cleaner covers are available for S&S Super E & Super G "Shorty" carburetors only.

S&S High Flow Air Filter and Adapter Kit

With larger and larger street engines becoming more common, S&S has developed a high flow air filter kit for Super E and G carburetors. The new S&S high flow filter is 1" taller than our standard filter and features a low restriction, pre-oiled filter element. The low restriction element, combined with the larger surface area provided by the 1" filter taller, adds up to an airflow increase of 37% percent over our standard filter - the ultimate free breathing set-up for your engine! The filter and filter adapters extend the Teardrop housing out 1". The resulting band of exposed filter peeking out from under the Teardrop imparts a high performance street racer look. Kit installs in minutes, no permanent modifications required.

* Not for use with S&S Super B or Super D carburetors, or Super E & G Kits for Buells.





High-flow filter with high performance looks.

Extended filter kit provides maximum airflow for air hungry engines. This free breathing set-up looks like it just came from the track. Easy to install, kit is one inch taller than our standard teardrop filter, and features premium filter media. Includes filter and three plated steel air cleaner extensions.

High Flow Filter Kit Contains:

(1) High flow filter for S&S Super E or G Teardrop air cleaner. (One inch taller than the standard S&S filter.)

(3) 1" Tall plated steel filter adapters.

Air Filter & Adapter Kit

For S&S Super E and G Carburetors
.....**17-0045**

Replacement Filter
.....**17-0055**

The S&S Teardrop Air Cleaner

The S&S teardrop air cleaner is one of the most recognizable shapes in the industry. This is testimony to its distinctive good looks and outstanding performance features–features like the uniquely designed backplate with air horn style radiused entryway and the dimpled cover with air directional cone on the inside. Both features help maximize air flow by giving intake air an efficient, easy path to follow into the carburetor. And the beauty of it all is that the S&S teardrop air cleaner is also available to fit stock Tillostson, Bendix and Keihin butterfly, CV carbs, or any carb with the same air cleaner mounting bolt pattern.

S&S Teardrop air cleaner kits provide the good looks and improved performance of the S&S design to riders using stock carburetors.

AIR CLEANER SELECTION CHART

Model Year	S&S L, H-D Tillostson Bendix, Keihin	Super B	Super E & G	Super D
1966-'84 Shovelheads (with 5-gallon tanks)	17-0199	17-0099	17-0440	17-0198
1966-'84 Shovelheads	17-0199	17-0099	17-0400	17-0198

John (JT) Thomas...

The Thomas brothers, John (JT) and Mike, from Bakersfield California, totally rebuilt this classic Shovelhead chopper (pictured with J.T.). The engine was built with an S&S 84" Hot Set Up Kit. All that is left of the original motor is the heads and cases.

S&S Super Stock™ Shovelhead Style Alternator Style Crankcases

S&S Super Stock™ Alternator style crankcases are perfect for stock replacement and for high performance applications. Available for stock, 3⅝", and 3 13/16" bore applications.

Special Features:

- All S&S Alternator crankcases are machined to accept the stock oil filter assembly introduced on some 1992 model Big Twins. This convenient, accessible location can be utilized to simplify installation of an oil filter in custom applications.
- S&S Shovelhead Alternator style crankcases are machined to accept 1981-'99 style oil pumps, and are machined for the stock 1981-'84 style oil distribution system.
- S&S Big Twin cases optimize crankcase oil scavenging efficiency by using a "ported" design breather passageway and a breather window that is machined to maximum timing specifications. These features allow the air/oil mist to move smoothly from the flywheel cavity to the gear chest of the engine.
- The return oil pick-up passage to the return side of the oil pump has been relocated in order to avoid the turbulence caused by the oil pump drive gear. This unique design results in greatly improved scavenging of oil from the gear case, and virtually eliminates oil carry over at sustained high speeds.

S&S Alternator Super Stock™ crankcases are compatible with stock 1970-up flywheel assemblies, primary covers, gearcovers, and clearanced for 38 amp alternator stators.

Big Twin S&S Super Stock™ Shovelhead Style Crankcase Kit includes all the required hardware fittings and bearings.

1970-'84 Shovelhead Style

S&S Shovelhead style crankcases are available machined for stock bore, 3⅝" bore, and 3 13/16" bore cylinders, and accept 1981-'84 style oil pumps. Machined for stock primary oil return. Available only in natural aluminum finish.

S&S Super Stock™ Big Twin Alternator Style Crankcase Selection Chart

Crankcase Style	Finish	Stock Bore	3⅝" Bore	3⅝" Bore (Small Diameter)	3 13/16" Bore	Special Order	Notes
1970-'84 Shovel	Natural	31-0003	31-0004	31-0071	31-0030	31-0002	1,2,3

NOTES:
1. 1981-'84 style oil pump.
2. Includes primary scavenge port machining.
3. Machined for 1970 & later alloy primary.

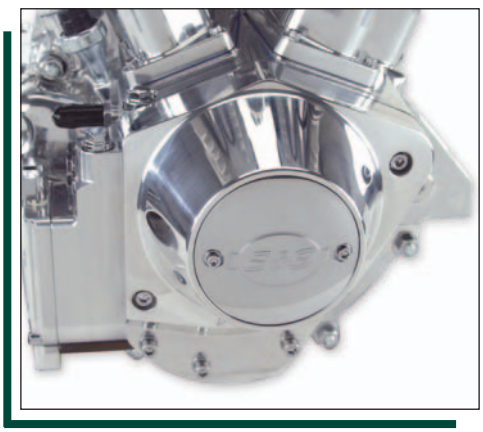
POLISHED BILLET ALUMINUM GEARCOVERS

In spite of the simple, elegant design, these polished billet gearcovers are tough as nails. Machined from a solid aluminum billet, they are extremely strong and are dimensionally more precise than is possible with a cast part. Another plus for the billet covers becomes apparent when they are polished. The finish is flawless, show quality polished aluminum. One look at these covers will convince even the most discriminating rider that this cover belongs on his or her bike.

Polished billet gearcover with chrome billet ignition cover.

AVAILABLE FOR 1973-'84 STYLE ENGINES

The 1973-'92 style polished billet gearcovers fit stock 1973-'92 engines, and are now standard equipment on all S&S complete Shovelhead style Engines. They are also available as an option on all other S&S Alternator style Engines. 1973-'92 style gear covers have the breather passage required for engines that have the crankcase breather routed directly out of the crankcase.



S&S POLISHED BILLET GEARCOVER KITS

Include gaskets and mounting hardware.

With Chrome Plated Billet Ignition Cover

1972-'92 . . . . . **31-0335**

Chrome Plated Billet Ignition Cover Only

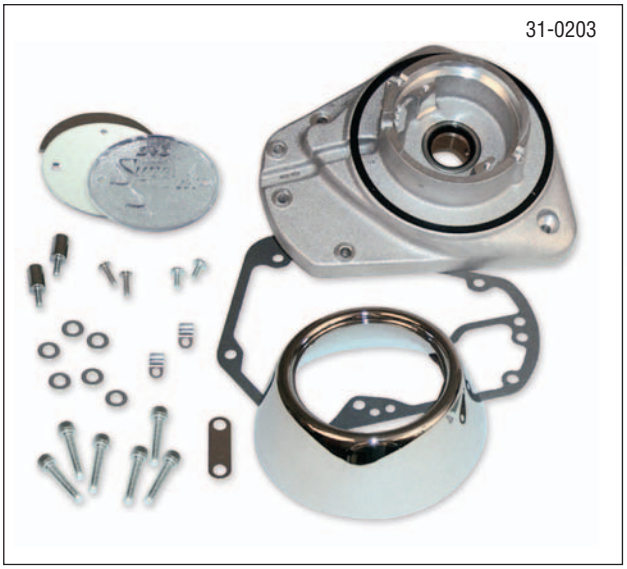
. . . . . **31-0332**

This chrome plated billet ignition cover is the perfect compliment to a polished engine, but it looks great, no matter what engine it is on.

Cast Gearcovers for Alternator Style Big Twins

For alternator style engines S&S offers cast gearcover kits for two year groups, 1973-'92 and 1993-'99. The 1973-'92 style is used on all S&S Engines, which allows the engine builder the option of routing the crankcase breather out of the crankcase, in addition to the cylinder head breathers. The 1993-'99 style gearcovers are perfect for 1993-'99 stock engines, or any engines built with 1992-'99 stock flywheel assemblies. The 1993-'99 style gearcovers are machined to accommodate the larger 1993-'99 style pinion gear nut, and are not machined for the breather passage required for "case breathing" engines.

Both year groups for Alternator style gearcover kits are available in three styles: flangeless, flanged with a chromed steel cover, and flanged with a chromed billet aluminum cover.



Alternator Style Gearcover with flangeless outer cover. 31-0203

Available in black powdercoat finish.

Special Features:

- Available for 1973-'92 and 1993-'99 style engines.
- Alternator style cast gearcovers are machined from 356-T6 aluminum castings, the same material used in S&S crankcases.
- S&S cast Alternator style gearcovers are distinctively different in appearance from stock and feature an inner cast aluminum gearcover and a decorative bolt-on outer cover. Three versions are available; flangeless, flanged with a chromed steel cover, and flanged with a chromed billet aluminum cover. All versions will accept either points or electronic ignition systems.
- Kits come with gaskets and mounting hardware.

NOTE:

Severe lubrication problems may occur if an improper cover is used which does not match the engine year model. Be sure the cover you order matches the lubrication path and oil scavenging requirements of your crankcases, especially if the cases in question are an aftermarket brand.

Continued...

Cast Gearcovers for Alternator Style Big Twins

1973-'92 Gearcover Kit

Includes gearcover with bushings installed, outer cover, points cover, gaskets, and assorted mounting hardware.

Kit with Chrome Steel Outer Cover
(HD#25268-84A) **31-0203**

Kit with Flanged Chrome Steel Outer Cover
(HD#25268-84A) **31-0211**

Kit with Flanged Chrome Billet Aluminum Outer Cover
(HD#25268-84A) **31-0209**

31-0209

Alternator Style Gearcover with chrome billet outer cover. 31-0209

31-0211

Alternator Style Gearcover with flanged outer cover. 31-0211

1993-'99 Gearcover Kit

Includes gearcover with bushings installed, outer cover, points cover, gaskets, and assorted mounting hardware.

Kit with chrome steel outer cover.
(HD#25256-93A) **31-0204**

Kit with flanged chrome steel outer cover.
(HD#25256-93A) **31-0212**

Kit with flanged chrome billet aluminum outer cover.
(HD#25256-93A) **31-0243**

S&S BIG TWIN ALTERNATOR STYLE CAST GEARCOVER SELECTION CHART

Year Group	Finish	Flange Style Points/Electronic	Billet Cover Points/Electronic	Flangeless Tall Points/Electronic
1973-'92	Natural	31-0211	31-0209	31-0203
	Black	31-0304	31-0305	31-0299

S&S Super Stock™ Big Twin Generator Style Crankcases

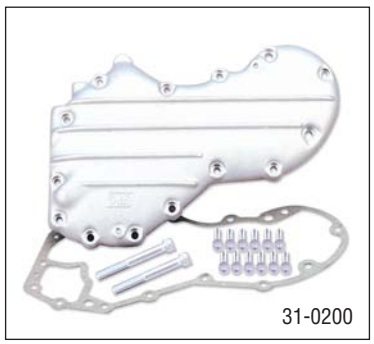
Big Twin Generator style crankcases are designed to appear like stock original H-D cases and give the engine builder an alternative to costly repairs when attempting to fix fatigued, broken, worn-out stock crankcases. In spite of the stock appearance, these cases incorporate updated design features that improve overall engine strength and reliability.

S&S Generator Style Crankcase assembly. 31-0010

Generator cases are machined to fit three engine year groups:

- Knucklehead 1936-'47, tin primary.
- Panhead 1948-'64, tin primary.
- Panhead & Generator Shovelhead 1965-'69, alloy primary.

S&S Super Stock™ Generator style crankcases are available for stock 3 7/16" or 3 5/8" bore, but can be special ordered for bore sizes up to 3 13/16" and deck heights as much as 3/16" taller than stock.



31-0200

Also available....

S&S Generator style gearcovers to fit S&S and stock crankcases. See page 30.

Special orders!

A special order sheet must be filled out for any special order crankcases. Ask your S&S customer service representative or download special order forms from our website at www.sscycle.com.

S&S BIG TWIN GENERATOR STYLE CRANKCASE SELECTION CHART

Crankcase Style	Stock Bore	3 5/8" Bore	Special Order	Notes
1965-'69 Pan or Shovel	31-0010	31-0013	31-0014	1,4,6
1948-'64 Pan	31-0008	31-0009	31-0014	1,2,5
1936-'47 Knuckle	31-0006	31-0007	31-0014	1,3,5
Alternator/Generator Evolution		31-0022		7
Alternator/Generator Shovel		31-0026		7

NOTES:
All S&S crankcases use Timken style sprocket shaft bearings and 1958 & later pinion bearings. These cases will not accept stock 1957 & earlier flywheel assemblies.

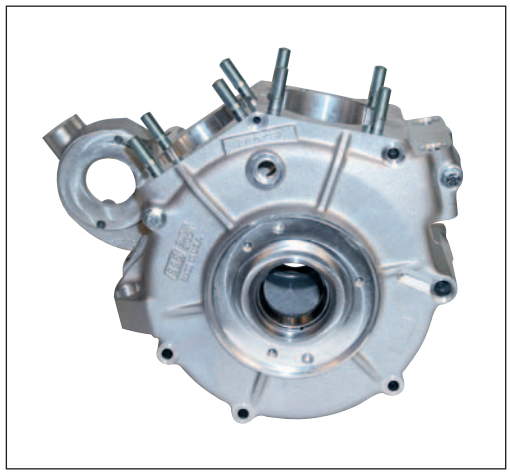
1. 1936-'69 style oil pump.
2. Machined for stock Panhead cylinder base oil feed.
3. Motor mounts are machined for stock 1936-'47 frames, adapter plate for 1948 & later style frames is included.
4. Includes primary scavenge port machining.
5. Machined for 1955-'64 tin primary.
6. Machined for 1965-'69 alloy primary.
7. Machined for 1970-up alloy primary.

Continued...

S&S Super Stock™ Big Twin Generator Style Crankcases

NOTES: For S&S Generator Style Crankcases

- Stock like features - external left case ribbed construction, fits stock primary chain covers for each respective year group - stamped steel for 1955-'64 engines (1936-'54 must use the 1955-'64 style inner steel primary cover) and cast aluminum for 1965-'69 engines. The manual timer advance/relay mounting boss on 1936-'64 is retained so early timers can be installed.
- Motor mounts on S&S Knucklehead style crankcases are machined to fit stock Knucklehead frames. An adapter plate is included so these cases may be used in 1948 and later style frames.
- All cases are designed for late style generator (two brush type) with 5/16" mounting bolts to eliminate early generator cradle/mounting strap bosses for simplicity and economics.
- All S&S Generator style crankcases use more readily available 1/4"-20 thread fasteners to mount gearcover, oil pump, tappet guides, timer, and timer advance bracket.
- Updated features include - sprocket shaft Timken® main bearing in all years instead of older, stock straight style roller bearings. This results in better flywheel assembly stability, placement, and longer engine life.
- Since all S&S crankcases use 1958 and later style main bearings, stock flywheel assemblies 1957 and earlier can not be used in S&S crankcases. Flywheel assemblies must have 1958 and later pinion shaft with 1.250" diameter bearing, and a 1954 and later style sprocket shaft designed for a Timken® main bearing.
- Generator cases for 1936-'47 Knucklehead engines are machined to supply oil to the heads from a boss located near the rear tappet guide or from a stock or S&S gearcover. Provision for oil scavenging from the heads in these crankcases is the same as stock with passageways that connect the tappet guides to the crankcase breather gear.
- Crankcases for 1948-'69 engines are machined with a provision to separate the oil supply to the top and bottom ends if an S&S oil pump is used. This feature lets you choose the 1972 and earlier stock "side oiling" system or the 1973 and later split oil system. The stock cast iron oil pump can be used for the "original look" and stock oiling system. If an S&S billet 31-6200 oil pump is used, the oiling system can be set up as stock or updated to a split system.
- Panhead engines 1963-'65 with outside oil supply lines to the cylinder heads must use the oil supply port located behind the rear tappet guide or the oil fitting toward the rear of the S&S gear cover. S&S Generator style crankcases do not have the stock style "outside oiler" oil supply boss, so special oil supply lines will need to be fabricated.



All S&S Generator style crankcases for 1936-'64 engines are machined for 1954-'64 style tin primary. 1936-'53 chassis must use 1954-'64 style inner primary cover.

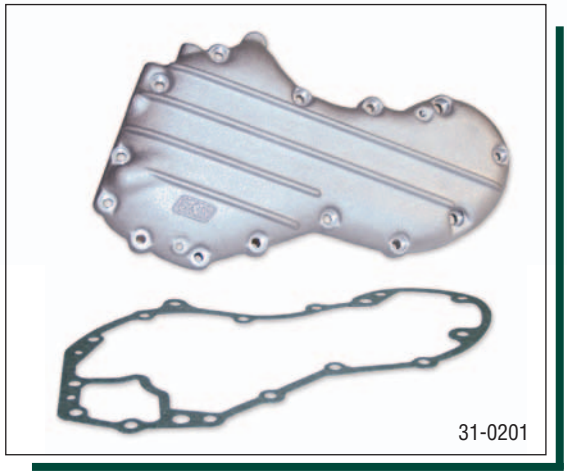
S&S Generator style crankases are also available for 1965-'69 style alloy primary.

S&S Gearcover Kits for Generator Style Big Twins

S&S offers three gear cover kits for Generator engines. Two of the kits are stock replacements for 1936-'53 and 1954-'69 model stock engines. The third fits engines using S&S 1936-'69 style crankcases or other aftermarket cases using the 1958-'69 style pinion shaft and socket head style mounting screws.

Special design features:

- S&S Generator style gearcovers are machined from 356-T6 aluminum castings, the same material used in S&S crankcases.
- Pinion shaft bushings supply oil to either side oiling or end oiling pinion shafts.
- Generator covers are styled like stock covers made during the mid and late-1950s. All are machined with a provision to duplicate original Knucklehead style top end oiling where the oil is routed through a fitting located on the boss at the rear of the cover.
- Stock replacement versions have countersunk mounting holes to match early ¼"-24 mounting screws and ¼" diameter generator mounting holes for early three brush generators. Generator mounting holes on 1954-'69 covers can be drilled out to 5/16" for use with 1958-'69 two brush generators. The cover used on S&S cases has counterbored mounting holes for socket head screws and 5/16" diameter generator mounting holes.
- All Generator style covers come with extraction screws in the dowel pin locations which makes for easy cover removal.
- All Generator gearcover kits come with a cover gasket. S&S style kits also include mounting hardware.



31-0201

1936-'53 Gearcover Kit

For stock H-D crankcases includes gearcover with bushings installed, gasket, and extraction screws. Fits 1936-'53 pinion shaft and mounting screws with countersunk heads. (HD#25216-36, 48) **31-0201**

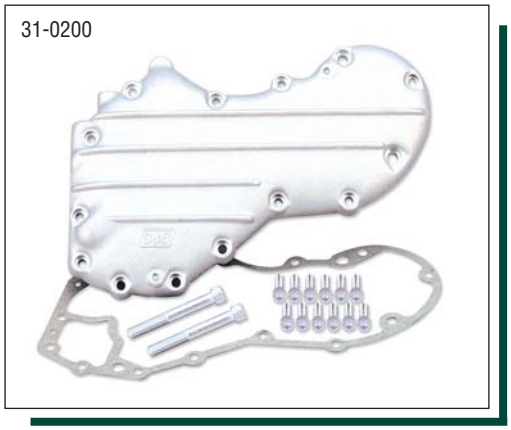
1954-'69 Gearcover Kit

For stock H-D crankcases includes gearcover with bushings installed, gasket, and extraction screws. Fits 1954-'69 pinion shaft and mounting screws with countersunk heads. (HD#25216-54, 65, 66).....**31-0240**

1936-'69 Gearcover Kit

For S&S crankcases includes gearcover with bushings installed, gasket, extraction screws, ¼"-20 cover mounting screws, and 5/16"-24 generator mounting screws. - Fits 1958-'69 pinion shaft and socket head style mounting screws. **31-0200**

31-0200



Basic Generator Style Engines can be ordered with the gearcover option.

31-0200

S&S QUICKEE PUSHRODS FOR TWIN CAM, EVOLUTION BIG TWIN, SPORTSTER AND SHOVELHEAD STYLE ENGINES

S&S developed a pushrod with a new type of adjuster for use with S&S Shovelhead style tappet guides. This is such a cool idea that we've also made it available for Evolution and Twin Cam engines. The threaded adjuster screws into the pushrod until the threads disengage and the adjuster simply slides into the pushrod making installation or removal a snap. Once the pushrod is installed and adjusted, the locknut prevents the adjuster from moving. The ball ends of the pushrods are drilled so that oil can flow through the pushrod. This is the stock oiling system for Evo's and Twin Cams, but this allows Shovelhead engines to be set up with 1984 and later style top end oiling, via the pushrods, provided S&S Shovel style tappet guides and roller rocker arms are also used. (See Page 5-20) for more information on S&S Shovelhead style tappet guides and rocker arms.

S&S Exclusive
Quickee Pushrods
US Patent Pending

S&S QUICKEE PUSHRODS		
Application	**Displacement**	**Part Number**
1969-84 Shovelhead *	74" - 103"	**93-5123**
Special Order	Specify	**93-5135**
* With S&S tappets, tappet guides, and Evolution style camshaft.		

NOTE:
S&S Quickee pushrods are designed for use with Evolution and Twin Cam style hydraulic tappets. They are not compatible with stock or aftermarket Shovelhead hydraulic tappets or most solid style tappets.

S&S Pushrod Kits for Shovelhead Engines

S&S makes two different styles of solid lifter conversion kits for Shovelhead engines. The first style includes adjustable V² style pushrods and solid lifter conversion cup inserts which replace the stock hydraulic units in the tappets and convert them to solid non-adjustable style. The second style of conversion kit uses solid non-adjustable pushrods and adjustable solid lifter inserts that replace the hydraulic units.

1966–'84 Shovelhead 74" & 80" Solid Lifter Conversion Kit, Adjustable Pushrod

Converts stock hydraulic lifters to solid, non-adjustable lifters. Includes all parts needed for converting to solid lifters: four adjustable steel pushrods and four non-adjustable lifter inserts that replace the stock hydraulic units.

1966-'84 SHOVELHEAD PUSHROD SELECTION CHART	
Adjustable Pushrods w/Adapters	
Includes adapters for converting 1953-'84 style hydraulic lifters to non-adjustable solids.	
Part No.	**Cylinder Length**
93-5067	5.330" (Stock)
93-5014	5.405" (+ 1/16")
93-5080	5.468" (+ 1/8")
93-5015	5.530" (+ 3/16")
93-5016	5.630" (+ 5/16")
93-5063	Special Order

93-5067

1966–'84 Shovelhead 74" & 80" Solid Lifter Conversion Kit, with Adjustable Lifter

Converts stock hydraulic lifter to 1948-'52 style adjustable solid lifter. Includes all parts needed for converting to solid lifters: four non-adjustable steel pushrods and four adjustable lifter inserts to replace the stock hydraulic units.

1966-'84 SHOVELHEAD PUSHROD SELECTION CHART	
Non-Adjustable Pushrods w/Adapters	
Includes adapters for converting 1953-'84 style hydraulic lifters to adjustable solids. Adjuster screw in the lifter adapters.	
Part No.	**Cylinder Length**
93-5068	5.330" (Stock)
93-5062	Special Order

S&S Pushrod Kits

Pushrod flex costs horsepower by preventing the valves from following the cam profile. This problem is most common in high-performance applications with heavier-than-stock valve springs.

S&S pushrods are designed to remain rigid and provide positive valve action at all engine speeds, which makes them ideal for stock and high-performance applications. They are available in stock and special lengths. Most S&S pushrods are made of 7/16" O.D. chrome moly steel tubing with pressed-in heat-treated ends. This provides maximum strength and durability regardless of the application.

See your local S&S Dealer for special length pushrods.

1966–'84 Shovelhead with 1948–'52 Lifters
74" & 80" Solid Lifter Pushrod Kit –

Requires 1948-'52 style adjustable lifters. Includes four non-adjustable steel pushrods. (Pushrods are identical to those used in kit 93-5068.)

Recommended for all Shovelheads and Shovel top/Pan bottom engines with 1948-'52 style lifters.

1966-'84 SHOVELHEAD PUSHROD SELECTION CHART	
Non-Adjustable Pushrods Only	
Pushrods for use with 1948-'52 stock style solid adjustable lifters.	
Part No.	**Cylinder Length**
93-5069	5.330" (Stock)
93-5026	Special Order

93-5069

93-5070

1966–'84 Shovelhead with Hydraulic Lifters
Stock Replacement Hydraulic Pushrod Kit –

Includes four adjustable steel pushrods. Stock adjusting screws (not included) must be used in these pushrods.

(HD#17904-66)

1966-'84 SHOVELHEAD PUSHROD SELECTION CHART	
Adjustable Pushrod Kits	
Adjustable pushrod kits for hydraulic lifters. Stock replacements for 1966-'84.	
Part No.	**Cylinder Length**
93-5070	5.330" (Stock)
93-5071	Special Order

S&S Pushrord Kits for Panhead Engines

NOTE:
Some aftermarket 1948-'52 style lifters are shorter than stock and may require longer than stock pushrods.

1948 – 1965 Panheads 61" & 74"
Panhead Solid Lifter Pushrod Kit –

Converts stock 1948-'52 valve train to solid lifter operation by replacing stock pushrods, which contain built in hydraulic units, with solid non-adjustable S&S pushrods. Requires stock 1948-'52 style adjustable lifters. Includes four non-adjustable steel pushrods. (Pushrods are identical to those used in kit 93-5058.)

1948-'52 PANHEAD PUSHROD SELECTION CHART	
Pushrods Only	
Solid lifter conversion pushrods for 1948-'52 stock adjustable lifters.	
Part No.	**Cylinder Length**
93-5029	5.205" (Stock 61")
93-5059	5.330" (Stock 74")
93-5027	Special Order

1953–'65 Panhead Stock Replacement Hydraulic Pushrod Kit

Includes four adjustable pushrods. Stock pushrod adjusting screws (not included) must be used with these pushrods. (HD#17905-53)

NOTE:
Must use original adjusting screw. (This screw is not supplied).

1953-'65 PANHEAD PUSHROD SELECTION CHART	
Stock Replacement Pushrod Kits	
Adjustable pushrod kits for hydraulic lifters.	
Part No.	**Cylinder Length**
93-5091	5.330" (Stock 74")
93-5092	Special Order

1953–'65 Panhead Solid Lifter Conversion Kit

Converts valve train to solid lifter operation. Includes all parts needed for conversion: four non-adjustable steel pushrods and four adjustable lifter inserts to replace the stock hydraulic units.

1948-'65 PANHEAD PUSHROD SELECTION CHART	
Pushrods w/Adapters	
Includes adapters for converting 1953-'65 style hydraulic lifters to adjustable solids.	
Part No.	**Cylinder Length**
93-5081	5.205" (Stock 61")
93-5058	5.330" (Stock 74")
93-5082	5.405" (+ 1/16")
93-5083	5.468" (+ 1/8")
93-5084	5.530" (+ 3/16")
93-5028	Special Order

S&S Pushrod Kits for Knucklehead Engines

93-5041

1936–'47 Knuckleheads 61" & 74" Solid Lifter Pushrod Kit –

Requires stock-style adjustable tappets. Includes four steel non-adjustable pushrods. (HD#17905-36)

1936-'47 KNUCKLEHEADS PUSHROD SELECTION CHART	
Non-Adjustable Pushrod Kits	
Part No.	**Cylinder Length**
93-5041	5.405" (Stock 61")
93-5044	5.530" (Stock 74")
93-5045	Special Order

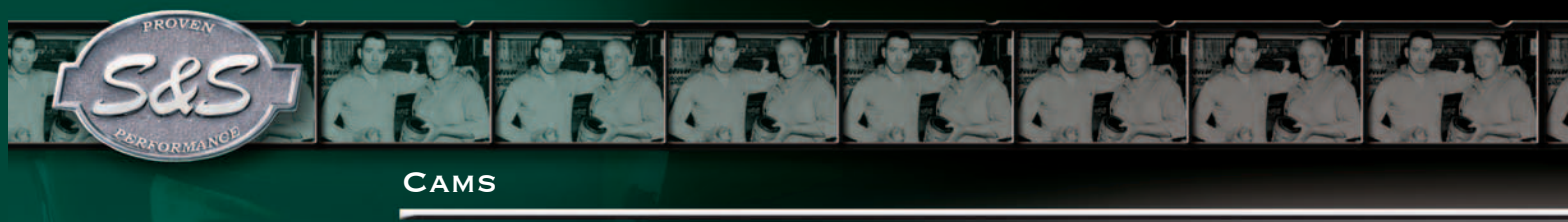
S&S Pushrod Kits for Ironhead Sportsters

1957–'85 Ironhead Sportsters 900cc and 1000cc - 7/16" Steel

1957-'85 Sportster – Includes four non-adjustable pushrods. S&S pushrods are a direct replacement for stock. (HD#17904-57)

1957-'85 IRONHEAD SPORTSTERS PUSHROD SELECTION CHART	
Part No.	**Cylinder Length**
93-5036	5.330" (Stock)
93-5038	Special Order

93-5030



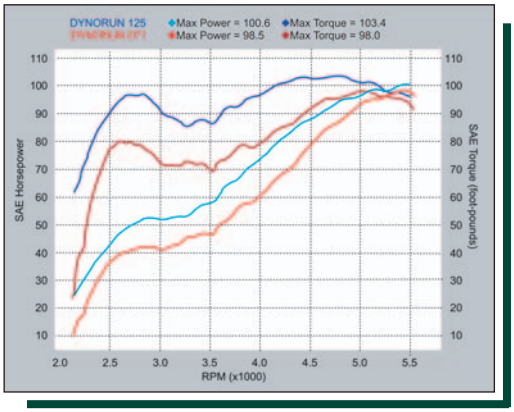
CAMS FOR PANS & SHOVELS
1948-'84 Panheads & Shovelheads

S&S 565S Cam
S&S 565S Cam Replaces The Time Honored 495!

For many years the S&S 495 cam was the one to use in a high compression Shovelhead engine. It worked great for stock heads that could not accommodate a lot of lift. The 495 cam helped set land speed records at Bonneville and was used in countless high performance street engines. But time marches on and when we introduced our S&S Shovel style heads with valve springs that could accommodate more lift and had ports that flowed well enough to take advantage higher lifts, we knew that a new cam was needed. It took a while to develop a cam to replace an "institution" like the 495, but here it is! The new 565S cam for big inch, high compression Shovelhead engines is just the ticket for big, bad, Shovel engines like our 98" and 103" Sidewinders (See dyno chart). Refer to the Cam specification chart for overall cam timing specifications.

This dyno chart shows tow runs on a 103" S&S Shovelhead style engine with an S&S Super D carb and 2" drag pipes. The lower set of curves show the torque and horsepower with the S&S 495 cam. The upper curves show the same bike with the new 565S cam. Notice that there is a significant increase in torque and horsepower across the entire rpm range, with the most impressive gains in the all important mid range. The dip in torque from 3000 to 4000 rpm is typical of the exhaust system used in this test.

Dyno results from Dyno Jet 150 Chassis dynamometer at S&S Cycle's Research and Development facility in Viola, Wisconsin.



1948-'84 PANHEAD AND SHOVELHEAD CAM SPECIFICATION CHART

Name	Application	Model Year	Camshaft Part Number	Valve Timing[1] Open/Close		Valve Duration		Valve Lift	Lift @ TDC[2]		Spring Spacing Required	Tappet[3] Type Required
				Intake	Exhaust	Intake	Exhaust		Intake	Exhaust		
S&S 450S	Engines up to 88" with up to 8.5:1 CR Good low and midrange torque	1948-'69	33-5062	18°/38°	40°/18°	236°	238°	.475" Pan .453" Shovel	.158" Pan .151" Shovel	.152" Pan .145" Shovel	No Bolt In[4]	Hydraulic
		1970-'77	33-5063									
		1978-'84	33-5064									
S&S 514	80" to 96" engines with 8:1 - 9:1 CR Good mid range.	1948-'69	33-5050	23°/43°	43°/23°	246°	246°	.540" Pan .514" Shovel	.177" Pan .169" Shovel	.177" Pan .169" Shovel	Yes	Solid
		1970-'77	33-5051									
		1978-84	33-5052									
S&S 560S	88" to 103" engines with 9:1 to 10.1:1 CR. Strong power throughout RPM range.	1948-'69	33-5059	20°/55°	60°/20°	255°	260°	.587" Pan .560" Shovel	.176" Pan .168" Shovel	.172" Pan .164"Shovel	Yes	Solid
		1970-'77	33-5060									
		1978-'84	33-5061									
S&S 565S	98" to 103" engines with 10:1 to 12:1 CR. Strong power throughout RPM range.	1948-'69	33-5193	25°/60°	65°/25°	265°	270°	.593" Pan .565" Shovel	.195" Pan .185" Shovel	.183" Pan .175" Shovel	Yes	Solid
		1970-'77	33-5194									
		1978-'84	33-5195									

1 Timing designation is function of zero lash @ .053" off base circle
2 TDC lifts are measured at the valve and are for reference only. Overlap valve lifts must be checked on assembled motor. Minimum valve to valve clearance of .040" is recommended.
3 Cams specified for solid tappets may be used with modern high performance hydraulic tappets with V² style hydraulic mechanism. Stock hydraulic tappets are not recommended.
4 1980-81 engines require conversion to late style valve guides.

Continued...
Cams for 1948-'84 Panheads and Shovelheads

S&S 450S Cam...

Bolt-In Cam for Shovelheads!

A bolt in hydraulic cam for 74" and 80" Shovelhead engines 1966-'79 and 1982-'84. (Can be used in 1981-'82 models if cylinder heads are updated to late style valve guides.) The 450S can also be used as a low end torque cam in Shovelhead engines up to 88" with compression ratios of up to 8.5:1. Although designed for use with hydraulic tappets, the S&S 450S can be used with solid lifters. Use with solids will result in more valve train noise slightly higher cylinder pressure, and slightly more torque.

S&S 565S Camshaft for 1978-'84 Shovelheads.
33-5195

S&S 514 Cam

For 84" to 93" strokers with compression ratios no greater than 9:1 -

best gains occur in the mid range from 2500 to 5000 rpm where most riding is done - relatively quiet and easier on the valve train than most other cams with lifts as high. Solid lifters or aftermarket hydraulic tappets are recommended, valve spring spacing and other normal clearancing checks required. See "Camshaft Specification Chart" for overall cam timing information.

S&S 560S Cam

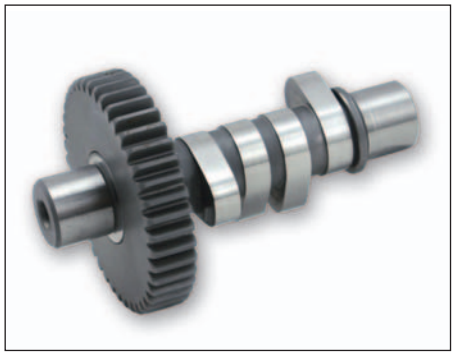
For 88" to 103" Shovelhead engines between 9:1 and 10:1 compression.

Excellent power across the rpm range. Not recommended for stock displacement engines, or engines with inadequate compression. Smaller engines can use slightly more compression than larger displacement engines. Requires high lift valve springs and normal clearance checks. See "Camshaft Specification Chart" for overall cam timing information.

Special Evolution Big Twin Style Cams for Generator Lower Ends

S&S Generator Evolution Style Cams - Generator style versions of our regular 1984-'99 V²-style grinds. Designed for our retrofit and specialty V²-style engines or any engine the requires an Evolution style cam in Generator style crankcases.

S&S GENERATOR EVOLUTION STYLE CAM	
Year	**Cam Only**
S&S 502G Cam Only*† - 1984-'99 heads/1948-'69 cases	**33-5074**
S&S 561G Cam Only*† - 1984-'99 heads/1948-'69 cases	**33-5077**
S&S 585G Cam Only*† - 1984-'99 heads/1948-'69 cases	**33-5131**
S&S 600G Cam Only*† - 1984-'99 heads/1948-'69 cases	**33-5132**
S&S 631G Cam Only*† - 1984-'99 heads/1948-'69 cases	**33-5078**
* Denotes valve spring spacing required. † Denotes normal clearancing checks required.	



S&S Generator style cams are used in the new S&S Generator and Alternator/Generator Shovelhead style engines.

High-Performance Valve Spring Kits

S&S valve spring kits are designed to simplify high-lift cam installation and reduce the risk of valve float. They eliminate most of the complicated procedures and specialized tools required to prepare cylinder heads for high lift cams. In some instances, S&S valve spring kits serve as excellent replacements in stock rebuild applications. All kits include detailed instructions.

1948-1984 Panheads and Shovelheads

.550" Lift Double Valve Spring Kit – 1948-'84 Big Twin with up to .550" lift. Includes 4 inner springs, 4 outer springs, and 4 aluminum top collars. Use with stock-style bottom collar, valve guides, valves with stock ⅜" stem, and stock keepers. Compatible with thin-stem valves if thicker keepers that maintain correct valve stem-top collar engagement are used. Late single bottom collars are available for use in S&S Shovelhead style heads and stock late 1981-'85 Shovelheads.

1948-'84 Big Twin for up to .550" Lift **90-2053**
Bottom Collars – Late 1981-'85 ..... **90-2038**

NOTE:
Panheads usually require clearancing between rocker cover and top collar.

1948-'84 Panheads and Shovelheads .590" Lift Triple Valve Spring Kit

1948-'84 BT with up to .590" lift. Includes 4 top collars, 4 bottom collars, 4 each outer, middle, and inner springs, shims, and 8 keepers. Use with stock valve guides, stock valves with ⅜" stem, and stock keepers. Compatible with thin-stem valves if thicker keepers that maintain correct valve stem-top collar engagement are used.

NOTE:
.590" kit is year-group specific because of different bottom collars supplied with early and late kits. S&S heads require late 1981-'84 style kit 90-2063 or 90-2064.

1948-Early '81 – For up to .590" lift.

Kit w/steel top collars **90-2060**

Kit w/titanium top collars..... **90-2061**

Late 1981-'84 or S&S Shovel Style Heads – For up to .590" lift.

Kit w/steel top collars **90-2063**

Kit w/titanium top collars..... **90-2064**

NOTE:
When ordering replacement valve springs for S&S Shovelheads, order the 1981-'84 style #90-2063 or #90-2064 kits.

Introducing...

S&S Roller Rocker Arms for 1966-'84 Shovelheads

The new S&S roller rocker arms for Shovelheads borrow some features of the S&S Evolution/Twin Cam style rocker arms. Like the S&S Evo style rockers, the S&S Shovel style rocker arms are machined from 4140 steel forgings and heat treated for maximum strength. The forgings are designed to eliminate stress points and provide the strongest, most durable rocker arm possible. S&S Shovelhead style roller rocker arms also feature the exclusive .750" long S&S rocker arm bushings. The S&S bushings provide 50% more load bearing surface than stock .500" bushings. The final Evo-like feature is an oil passage from the pushrod cup of the rocker arm to the inside of the rocker arm body that allows top end oiling through the pushrods when used in conjunction with S&S tappet guides and pushrods. Oiling can also be done through the stock Shovelhead oiling system.

S&S Shovelhead style rocker arms have a nominal rocker ratio of 1.5:1, and high precision CNC machining insures that this ratio will be consistent in all parts. Our experience has shown that the actual rocker ratio of stock and aftermarket Shovelhead style rocker arms can vary widely. Some are less than the nominal stock 1.43:1 ratio and some are more.

The roller tip reduces valve tip wear and side loading of the valve stem in high lift applications. S&S Shovelhead style roller rocker arms are compatible with stock and S&S billet Shovelhead style rocker boxes. Some clearancing may be required when using stock rocker boxes.

S&S Roller Rocker Arms for Shovelhead Style Engines

- Forged from 4140 steel heat treated and shot peened for maximum strength.
- Roller tip reduces side thrusting on valve stem in high lift applications .750" long bushings provide 50% more load bearing area than stock style rocker arms.
- Can be oiled through pushrods when used with S&S Shovelhead style tappet guides and pushrods.
- 1.5:1 rocker ratio.
- Compatible with stock or S&S billet rocker boxes.

S&S Shovelhead Style Rocker Arms

Set - Includes two each front and rear rocker arms **90-4320**

Front exhaust or rear intake.....**90-4320F**

Rear exhaust or front intake **90-4320R**

S&S Billet Tappet Guides, Hydraulic Lifters, and Pushrods for Shovelhead Style Engines

The original Shovelhead hydraulic tappets were not up to the challenge of high performance applications. High rpm, stronger valve springs, and higher lift cams pushed them beyond their limits. That's why most hot rod Shovels were traditionally built with solid lifters. An effective and economical solution was needed to improve performance and reduce valve train noise and required maintenance.

S&S billet tappet guides for Shovelheads are similar to "Evolution style" tappet guides and are designed to use S&S 1986-99 Evolution style hydraulic tappets. These tappets have proven themselves in countless high performance Evolution engines. Corrected tappet bore geometry maintains specified valve event timing using Evolution style cams. The only difference will be about an 8% reduction in valve lift due to the lower Shovelhead rocker arm ratio. We decided to design these tappet guides to be used with Evo style cams in order to allow engine builders and riders to take advantage of more sophisticated cam technology and to choose from the huge number of readily available Evo style cams.

Because the S&S tappet guides are taller than the stock Shovelhead guides, traditional Shovelhead style pushrods can not be installed or removed from an assembled engine. To address this problem we developed the new S&S Quickee pushrods that allow for simple and efficient pushrod service. (See page 5-25 of this catalog for more information on S&S Quickee pushrods.)

Note:
The S&S tappet guides and tappets must be used with an Evolution style camshaft.

S&S Exclusive
Tappet Guides
US Patent Pending

Tappet Guides and Tappets For Shovlehead Style Engines

- CNC machined from 6061-T6511 aluminum billets and polished to a show finish.
- Evolution/Shovel hybrid style tappet guides.
- Uses readily available Evolution style hydraulic tappets
- Corrected tappet bore geometry allows the use of Evolution style camshafts.
- Kit includes special pushrods that allow installation without removing heads or rocker cover.
- Compatible with stock Shovelhead style pushrod covers.

S&S Hydraulic Lifter Update Kit For Shovelhead Style Engines

S&S offers a complete kit to upgrade your Shovelhead to modern hydraulic lifters. The kit includes tappets, tappet guides, gaskets, hardware, pushrod cover keepers, and a set of Quickee pushrods.

.....**33-5451**

S&S Tappet Guides and Tappets For Shovelhead Style Engines

Replacement Tappet Guides

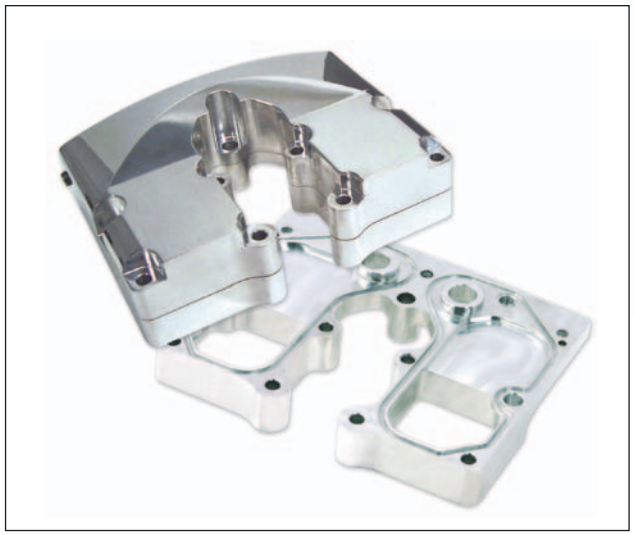
Set.....**33-5450**
Front.....**33-5450F**
Rear **33-5450R**

Replacement Tappets

Without HL_2T Kit (Set of four).....**33-5352**
With HL_2T Kit (Set of four).....**33-5353**

S&S Rocker Covers for Shovelhead Style engines

Just the fact that the S&S polished billet rocker covers for Shovelheads look so good may be reason enough to put them on your bike, but the beauty is not just skin deep. The well thought out design offers a number of advantages over conventional cast rocker boxes. Machined from billets of 356 aluminum on modern CNC machining centers, these rocker boxes provide the ultimate in dimensional accuracy and stability. The top and bottom sections of the covers are sealed with an o-ring type seal that insures leak free operation. Rocker shafts used in the S&S Shovel style rocker boxes are an economical straight design similar to Evolution rocker shafts. Anyone who has had to replace a set of stock Shovelhead rocker shafts can tell you that this will save you money when it comes time to rebuild the top end.



S&S Rocker Covers for Shovelhead Style Engines

S&S Exclusive Rocker Boxes US Patent Pending

- CNC machined from 6061-T6511 aluminum billets and polished to a show finish.
- Two piece design allows removal and installation in some frames.
- Top and bottom are sealed with o-ring type seal for leak free operation.
- Can be used with Stock style rocker arms or S&S Shovelhead style roller rocker arms.
- Top end oil can be supplied through stock Shovelhead oil fitting or through pushrods when used with S&S Tappet guides and pushrods.
- Exclusive S&S design uses economical straight rocker shafts.
- Clearanced for valve lifts of up to .590" with S&S roller rocker arms.

S&S Rocker Covers for Shovelhead Style Engines

Set – Includes front and rear rocker boxes with rocker shafts
.....**90-4305**

S&S Roller Rocker Arms for Shovelheads

Set of four.....**90-4320**

Replacement Rocker Shafts for S&S Rocker Covers

Set of four.....**90-4350**

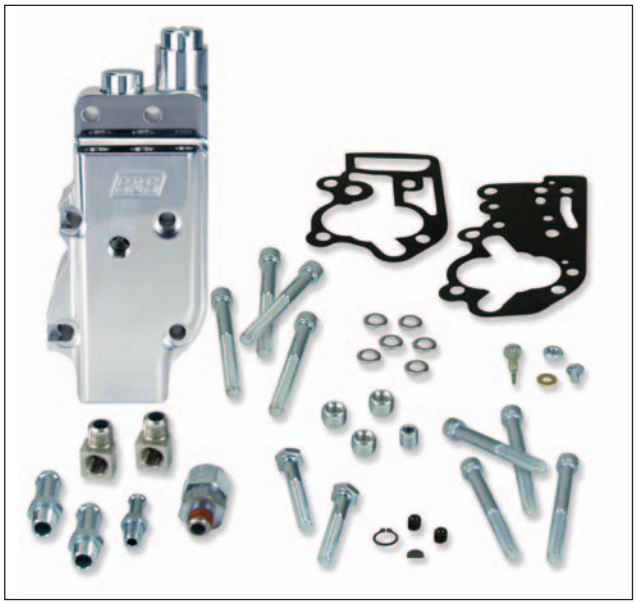
S&S Standard Billet Oil Pumps

S&S oil pumps are CNC machined from solid alluminum billets. This material has exceptional strength and is entirely free of voids or defects. The result is a superior quality pump that looks as good as it performs. The end product is a series of oil pump kits which provides 1936-'99 Big Twin owners with state of the art technology.

Intended as a direct replacement oil pump assembly, the S&S pump incorporates some unique S&S design features along with all of the improvements made over the years that resulted in the 1981 and later stock H-D pump. To compliment the S&S pump we have engineered a series of oil pump drive and breather gears which enables the owner/builder to realize the full potential from the S&S design. These parts are available in convenient kits which make it easy to order everything you need at one time.

S&S oil pump kits are available for three basic year groups, 1936-'72, 1973-'91 and 1992-'99. Installations on engines from 1936-'69 can be a simple bolt on, or the oiling system can be updated with simple drilling steps with the S&S drilling fixture. Installations on 1981-up engines are strictly bolt on and require no crankcase modifications. Engines from 1970-'80 require a simple drilling step and engines from 1970-'72 require an additional plugging step: both steps can be performed while the engine is in the chassis. (See NOTES.) Easy to follow installation instructions are provided with every kit.

Parts designed to fit as direct replacements are listed with the H-D part number they replace. If no H-D part number is given, then the S&S part fits only the parts listed in the fitment section of the description.



Oil pump kits with gears are offered primarily for "scratch built" applications where the builder needs all these parts.

Special design features:

- All pumps use the same style oil supply and return gears as the stock H-D aluminum pump for maximum oil volume and scavenging.
- S&S pumps for 1936-'67 engines used with the S&S oil pump drive gears deliver 33% more oil than the original cast iron pump.
- S&S pinion and oil pump drive shaft drive gears increase oil volume delivered by 25% over stock on 1972 and earlier engines. (See NOTES on following page.)
- Early engines last longer because of better lubrication and cooling. Marginal oil volume to operate the hydraulic lifters is no longer a problem. (See NOTES on following page.)
- All pumps are machined with an oil pressure relief bleed off passageway to the cavity above the oil pressure relief valve. This relieves pressure build up on top of the valve to maintain consistent oil pressure from the time the engine is started to the time it's shut off. (See NOTES on following page.)
- The oil pressure bypass route on all pumps allows excess oil not used by the engine to return to the supply side of the pump thereby eliminating a needless scavenging and filtering step. (See NOTES on following page.)
- S&S billet oil pump covers are available in two versions for both early (1936-'91) and late (1992-'99) styles. The standard cover allows total flexibility for oil system configuration with a number of oil feed and return options. The custom application covers are intended for custom motorcycles where a clean, simple appearance with a minimum of oil lines is desired. Custom application covers have one feed and one return hole in the bottom of the cover only. Complete oil pump kits are available with standard and custom covers . See the "Oil Pump Kits for 1936-'99 Big Twins Chart" for part numbers of kits. See the "Oil Pump Kit Replacement Parts Selection Chart" for replacement parts. (See NOTES on following page.)

Crankcase Oil Passage Drilling Jig

.....**53-0013**

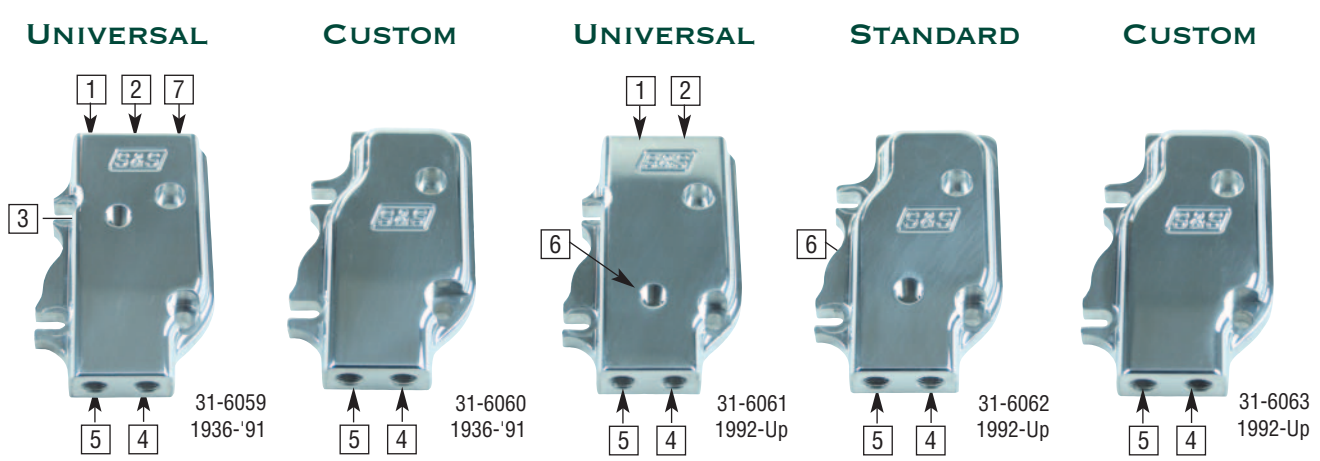
Continued...

S&S Standard Billet Oil Pumps

NOTES:

- S&S offers a drill jig, part 53-0013, that enables any engine builder to perform all the required and optional modifications to install any S&S oil pump kit. Consult the Special Tools section for details.
- S&S pinion shaft pump drive gear, part 33-4237 for 1939-'53 engines or part 33-4232 for 1954-'89 engines can be installed along with pump drive gear part 33-4230 on any S&S oil pump or stock oil pump in 1939-'72 engines to speed up the pump and increase oil volume delivered by up to 25%. While most rebuilds may not require new drive shaft and pinion shaft drive gears, S&S recommends that the faster drive ratio be utilized to improve maximum potential oil volume in engines where hydraulic lifters are to be used. This conversion may not be desirable for Knucklehead engines where returning cylinder head oil may be a problem.
- Our primary goal was to design a stock replacement pump, but our research indicated that 1948-'72 engine owners could go a step further. Not only could they replace their old worn out pump, but also they could improve and update their overall oiling system to the hydraulic units and top end through a series of simple drilling steps. These steps are optional and recommended only if hydraulic lifters are going to be used.
- Some engine configurations feed oil to the primary chain through passageways inside the crankcases and others feed oil through hoses directly from the oil pump cover. 1973 and later meter the oil with the breather valve gear while earlier models use an adjustable metering screw or a small fixed metering hole in the oil pump body to supply this oil. All of these oiling system designs are supported by the appropriate S&S oil pump kits.
- **Chrome Plating the Pump**
  Everyone is concerned about how their motorcycle looks. S&S is no different. If we thought that chrome plating the oil pump was a good idea, we would have done it. The truth is, it is extremely difficult to chrome plate an oil pump without getting chrome in the passageways, cavities or on the machined surfaces where the gears, check ball, and pressure valve operates. Chrome in these areas as well as on the gasket surfaces impairs the pumps performance by altering the operating tolerances machined into the parts. In addition particles of chrome may break loose causing damage to the pump and the engine. Because of this, S&S does not recommend chrome plating the pump body or cover. S&S voids its warranty if these parts are chrome plated.

Oil Hole Identification for S&S Billet Oil Pumps



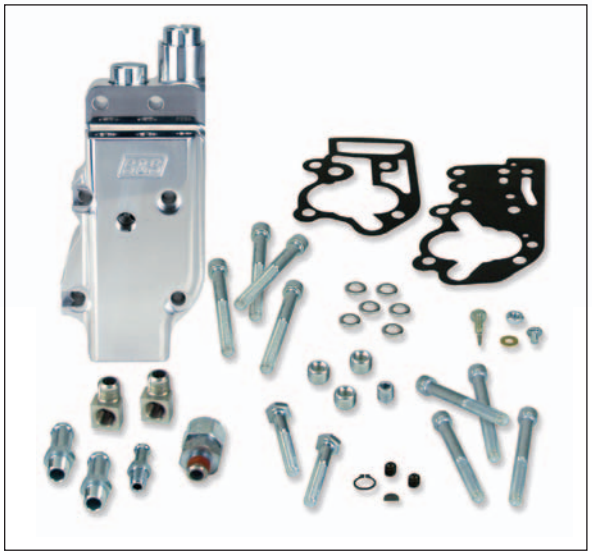
1. Top oil return hole
2. Top oil supply hole
3. Oil pressure switch or gauge hole
4. Lower oil supply hole
5. Lower oil return hole
6. Middle oil supply hole
7. Front chain oiler hole

Standard Billet Oil Pump Kits

Note that some kits include a breather gear and shim kit with an oil pump assembly. The 1965-'69 and 1970-'72 kits with gears are designed specifically to improve primary chain oiling in engines from these year groups. Improved primary chain oiling is done by using positive crankcase pressure to provide an oil mist from the flywheel cavity through a metering hole in the breather valve gear in the same manner as 1973-'84 stock systems do. Primary chain oiling is automatic and precise eliminating potential damage to the primary chain or dry clutch because of too little or too much oil.

Kits which include an oil pump assembly, drive shaft and pinion shaft drive gears, breather gear, and shim kit are offered primarily for "scratch built" applications where the builder is usually starting out with aftermarket crankcases and needs all of these parts. These kits may also be applied to older engines where a complete overhaul requiring all new parts is to be performed.

Oil pump only kit includes supply gears, return gears, drive shaft, drive shaft keys, drive shaft snap rings, check ball, check ball spring, pressure valve, pressure valve spring cover screws with o-rings, miscellaneous hose fittings, plugs, screws, paper gaskets, and mounting hardware with both early style ¼"-24 and late style ¼"-20 mounting bolts.



Typical "pump only" oil pump kit contains all parts needed for oil pump replacement.

CAUTION:

Incorrect gear fit causes binding and premature wear or damage to gears which may also result in damage to other engine components.

NOTES:

- Stock 1965-'72 engines equipped with H-D oil pumps use different primary chain oiling methods than 1973-up engines. To convert an engine from this year group to 1973-up primary chain oiling method, an S&S oil pump kit 31-6202, or 31-6203 can be used in conjunction with a 1973-up breather gear.
- Kit 31-6294 for 1970-'77 and kit 31-6295 for 1977-'91 contain the same oil pump assembly. The difference between kits 31-6294 and 31-6295 is the pitch diameter of the breather gears provided. These gears match the pitch diameter of the pinion and cam gears in their respective year group. Therefore, if a late pinion and cam gears are used in an early engine, kit 31-6295 should be used to insure correct fit between cam and breather gear. The plugging and drilling steps required for the specific year crankcases used still apply regardless which pump kit is used.

OIL PUMP KITS FOR 1936-'84 BIG TWINS

Year Crankcases	Oil Pump Assembly Only	Oil Pump Assembly with Drive Gear, Breather Gear, & Shim Kit	Oil Pump with Custom Cover without Gears	Oil Pump with Custom Cover with Gears	Oil Pump with Improved Primary Oiling without Gears	Oil Pump with Improved Primary Oiling with Gears
1936-'47	31-6200§		31-6201			
1948-'53	31-6200*	31-6292	31-6201	31-6245		
1954-'64	31-6200*	31-6293	31-6201	31-6246		
1965-'69	31-6200*	31-6293	31-6201	31-6246	31-6202*§	31-6248
1970-'72	31-6200*	31-6294	31-6201	31-6239	31-6203*	31-6297
1973-'77	31-6203§	31-6294	31-6204	31-6239		
1978-'84	31-6203§	31-6295	31-6204	31-6240		

* Requires 1973-'77 breather gear.
§ Universal cover with top and bottom feeds. (Supplied with all S&S V² Engines.)

Proven Performance – S&S Testing

The S&S company motto is "Proven Performance", and it is not just something we say. It's what we do. S&S cylinder heads have been subjected to a comprehensive testing program to insure that the performance will be there every time you twist the throttle. We've proved it! Flow testing, dyno testing, many thousands of simulated miles on our engine durability stand, and of course many more thousands of miles of real world road miles and countless passes at the race track have proven that S&S cylinder heads do perform.

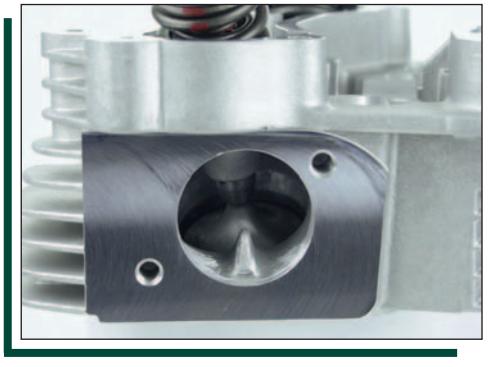
State Of The Art Manufacturing

S&S cylinder heads are machined from heat treated aluminum castings, using "state of the art" NC machining centers for the best possible dimensional precision at the lowest possible cost. This high degree of capability assures that the quality our customers demand and have come to expect from S&S is consistent in every part we make. The efficiency that we gain from automated machining helps to lower our costs, and that means that our customers can purchase S&S quality components at competitive prices.

Applications

S&S cylinder heads for Shovels, Evolution Big Twins, Evolution Sportsters, and Twin Cams are recognized as the "best" in terms of performance and value. They are designed to be easy to install, and to be compatible with stock components whenever possible. Stock-like outer dimensions eliminate most clearance issues often associated with high performance cylinder heads. However, all S&S heads for Evolution and Twin Cam style engines have larger than stock intake ports for increased air flow. This requires that a special S&S intake manifold be used that matches the diameter of the S&S intake port. Depending on the type, S&S cylinder heads are available in natural aluminum, black wrinkle powdercoat and polished finish.

S&S also has specialized cylinder heads for all-out racing engines which can be found starting on Page 11-46 in the Racing section of this catalog.



S&S Super Stock™ Cylinder Heads for 1966-'84 Shovelhead Big Twins

Super Stock™ Shovel style replacement heads for 1966 to 1984 Big Twins maintain a stock appearance for restoration purposes but offer improved port shapes for riders interested in more performance.

Complete Shovelhead style cylinder head kits include all required gaskets and hardware.

Overall Construction

As with other S&S heads, our CNC machining maintains dimensional accuracy and reduces cost. This allows us to offer the finest possible parts at a reasonable price. While stock heads use studs to attach the rocker box assemblies, S&S heads utilize 5/16"-18 hex-head bolts. Rocker cover bolts are included with each complete Shovel-style head kit. Otherwise, S&S heads accept all stock-style components.

Ports and Combustion Chamber

Intake and exhaust ports are in the stock locations and are the same size as stock. Stock intake manifolds and exhaust pipes are easily installed with no modification required. Heads are available for both the 1966-'78 o-ring and 1979-'84 rubber band-type manifolds. Since S&S heads are compatible with stock manifolds, special manifolds are not required.

S&S Shovel style intake ports feature a directional vane to route the incoming fuel-air mixture around the valve guide and valve stem for improved performance. At 1.940", intake valves are the same diameter as stock, but exhaust valve diameter (1.720") has been reduced by .030" to improve valve to valve clearance for cams with high TDC lifts and to improve flow. A stock-like hemispherical combustion chamber is compatible with all standard Shovelhead style pistons.

Valve Train Components

S&S Shovel style valve train components are specifically selected for durability under contemporary, real-life conditions. They are compatible with present unleaded fuels. Valve springs can handle .590" total lift, and are available with steel or titanium top collars. Heads are machined to accept cams with TDC lifts of .210" on both valves.

Simple Installation

Because S&S Shovel style heads have stock dimensions, they readily bolt on with a stock-like fit with no clearance problems with frames and standard Shovel exhausts. Complete kits include all gaskets required for installation except intake manifold seals.

Continued...

S&S Super Stock™ Cylinder Heads for 1966-'84 Shovelheads

Complete Assemblies

Shovel style cylinder heads are sold complete, assembled with premium components. Installed parts include valve seats, guides, seals, valves, valve springs, collars, and keepers. Complete kits also include rocker cover gaskets, cylinder head assemblies, head and base gaskets, miscellaneous hardware, and instructions.

S&S Shovelhead style cylinder heads are available with natural aluminum or black powdercoat finish. (Shown above.)

Options For Special Order

S&S Shovel style cylinder heads are available in black powdercoat as well as the cast aluminum finish. Machining for dual spark plugs and/or external oil return lines is available at an extremely reasonable cost. Both of these options are normally associated with large-displacement, high-performance, competition engines. However, dual spark plugs are often used in street engines to control detonation, and external oil returns are not uncommon on high performance Shovelhead street engines. External oil returns are used to redirect return oil from the cylinder heads so that it does not drain into the flywheel cavity in the stock manner. This is intended to reduce drag on the flywheels at high rpm.

Shovel Style Cylinder Head Set Selection Chart Aluminum Finish

		Complete w/Valves & .590" Springs – Assembled						Bare w/o Valves & Springs	
		Aluminum Finish			Black Powrdercoat Finish			Aluminum Finish	Black Powdercoast Finish
Engine Year & Type	Bore	Set Part No.	Front Part No.	Rear Part No.	Set Part No.	Front Part No.	Rear Part No.	Set Part No.	Set Part No.
1966-'78	stock	90-1496	90-1496F	90-1496R	90-1596	90-1596F	90-1596R	90-1492	90-1592
O-ring	3⅝"	90-1497	90-1497F	90-1497R	90-1597	90-1597F	90-1597R	90-1493	90-1593
1979-'84	stock	90-1498	90-1498F	90-1498R	90-1598	90-1598F	90-1598R	90-1494	90-1594
Band	3⅝"	90-1499	90-1499F	90-1499R	90-1599	90-1599F	90-1599R	90-1495	90-1595
Special Order		90-1490							

Replacement Cylinder Heads for S&S 93 HC Shovelhead Style Engine

O-ring style 3⅝" dual plugged.

Set.....**90-1491**

Set without Valves and Springs **90-1489**

Limited Warranty Standard Parts

Who Is Covered By This Warranty?

This warranty covers only the original Consumer Purchaser of these parts and is not transferable.

What Does This Warranty Cover?

S&S Cycle, Incorporated (the "Company") warrants these parts to be free from defects in material and workmanship. If the parts become defective during the warranty coverage period, the Company will, at its option, repair or replace any, or all, defective parts. Repair or replacement of defective parts is the sole and exclusive remedy.

How Long Is The Warranty Coverage?

The warranty coverage remains in force for a period of twelve (12) months from the date that the original Consumer Purchaser buys the parts. However, warranty coverage will automatically terminate if the original Purchaser sells or otherwise transfers all or any portion of the purchased parts.

What Is Not Covered by This Warranty?

The Company shall not pay or be responsible for the cost of shipping the defective parts to the Company for service under this warranty, nor will the Company pay for the cost of labor to remove and/or replace the defective parts.

Moreover, the Company shall have no obligation under this warranty in the event that the parts become defective in whole or in part as a result of improper assembly, installation, break-in, maintenance, or use, or any other misuse or mistreatment of the parts, including, without limitation, operation of the parts with fuels, oils or lubricants not conforming to specifications published by the Company or continued operation of the parts after a defect or malfunction occurs or is identified or suspected.

The Company shall have no obligation under this warranty for defects in parts with a powdercoat finish, when that option is selected, if the defects are caused by, but not limited to, negligence of parties other than the Company; an accident; ordinary wear and tear; assembly or disassembly; power washing; natural occurrences like stone chips; bead blasting; improper maintenance including the use of any harsh cleaning agent, chemical or solvent; and salt or other substances used on streets and highways for maintenance and safety.

The Company provides touch-up paint with powdercoated parts. It is the customer's responsibility to repair minor finish damage to prevent or inhibit further deterioration.

It is the responsibility of the original Consumer Purchaser to cease operation as soon as a defect or malfunction is identified or suspected. The failure to cease operation once a defect or malfunction exists can cause substantial damage to the Company's parts that could otherwise be avoided.

In addition, the Company shall have no obligation under this warranty for parts defects caused by alteration including, but not limited to, polishing; powdercoating; painting; removing or reconfiguring any components; modification, repair, or unauthorized service.

The Company shall have no obligation under this warranty if the parts are used in racing or similar competitive activities. The Company shall have no obligation under this warranty when a competition application, including but not limited to a turbocharger, supercharger or nitrous oxide, is used with the Engine. Further, the Company shall have no obligation under this warranty for any parts that are included in a Competition Package Option offered by the Company since the Package is for use in racing and similar competitive activities.

THE COMPANY SHALL NOT BE LIABLE FOR AND DISCLAIMS ALL CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THESE PARTS.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

Limited Warranty Return Authorization

What Are The Procedures To Obtain Service Under This Warranty?

To obtain service under this warranty, the original Consumer Purchaser should immediately contact the dealer where the Engine was purchased. The dealer will then contact the Company for a determination as to whether the defect in the Engine or part is covered by this warranty.

THE DEALER OR SERVICE PROVIDER MUST RECEIVE AUTHORIZATION FROM THE COMPANY BEFORE PROVIDING SERVICE UNDER THIS WARRANTY.

In the event that the Company determines the Engine or part must be returned to the Company for evaluation or service, the Company will provide the dealer with a Return Authorization Number to put on the shipping container for identification.

The original Consumer Purchaser or dealer must clean and properly package the Engine or part so as not to cause further damage and return the Engine or part, shipping costs prepaid, to the Company. The Return Authorization Number must be clearly visible on the outside of the shipping container. If the Engine or part must be cleaned prior to warranty inspection the cost of cleaning will be charged to the original Consumer Purchaser or dealer.

The original Consumer Purchaser or dealer must also send to the Company a detailed explanation of the relevant facts concerning the nature of the problem, the specific use of the Engine, and the circumstances giving rise to the defect or problem.

If it is not practicable to contact the dealer for warranty service, the original Consumer Purchaser may contact the Company at the following address, telephone number, fax number or e-mail address:

S&S Cycle, Incorporated
Attention: Technical Services
14025 County Highway G P.O. Box 215
Viola, WI 54664-0215

Phone: 608-627-8324 • Fax: 608-627-0773
Email: sstech@sscycle.com
Direct Phone: 608-627-TECH (8324)

Are There Other Warranties?

THE WARRANTIES STATED IN THIS WARRANTY REPLACE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY OTHER OBIGATIONS OR LIABILITIES ON THE PART OF THE COMPANY WHETHER IN CONTRACT, WARRANTY, NEGLIGENCE OR OTHERWISE, TO THE EXTENT NOT PROHIBITED BY LAW.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

How Do State Laws Relate To This Warranty?

This warranty gives you specific legal rights. You may also have other rights that vary from state to state.

Limited Warranty Complete Factory-Assembled Engines

Who Is Covered By This Warranty?

This warranty covers only the original Consumer Purchaser of the Complete Factory-Assembled Super Stock Engine (the "Engine") and is not transferable.

What Does This Warranty Cover?

S&S Cycle, Incorporated (the "Company") warrants this Engine to be free from defects in material and workmanship. If the Engine or any part thereof becomes defective during the warranty coverage period, the Company will, at its option, repair or replace the Engine or any, or all, defective parts. Repair or replacement of defective parts is the sole and exclusive remedy.

How Long Is The Warranty Coverage?

The warranty coverage remains in force for a period of twelve (12) months from the date that the original Consumer Purchaser buys the Engine. Engines specifically designed for and sold with the S&S Intelligent Spark Technology ignition system are covered by a special twenty four (24) month warranty. However, warranty coverage will automatically terminate if the original Consumer Purchaser sells or otherwise transfers all or any portion of the Engine.

What Is Not Covered by This Warranty?

The Company shall not pay or be responsible for the cost of shipping the defective Engine or part to the Company for service under this warranty, nor will the Company pay for the cost of labor to remove and/or replace the defective Engine or part.

Moreover, the Company shall have no obligation under this warranty in the event that the Engine becomes defective in whole or in part as a result of improper installation, break-in, maintenance, or use, or any other misuse or mistreatment of the Engine, including, without limitation, operation of the Engine with fuels, oils or lubricants not conforming to specifications published by the Company for use in or with the Engine or continued operation of the Engine after a defect or malfunction occurs or is identified or suspected.

The Company shall have no obligation under this warranty for defects in the Engine's black powdercoat finish, when that option is selected, if the defects are caused by, but not limited to, negligence of parties other than Company; an accident; ordinary wear and tear; assembly or disassembly; power washing; natural occurrences like stone chips; bead blasting; improper maintenance including the use of any harsh cleaning agent, chemical or solvent; and salt or other substances used on streets and highways for maintenance and safety. This warranty does not cover consumables, that is, those parts consumed in the normal operation of the Engine.

The Company provides touch-up paint with each powdercoated Engine. It is the customer's responsibility to repair minor finish damage to prevent or inhibit further deterioration.

It is the responsibility of the original Consumer Purchaser to cease operation as soon as a defect or malfunction is identified or suspected. The failure to cease operation once a defect or malfunction exists can cause substantial damage to the Engine that could otherwise be avoided.

In addition, the Company shall have no obligation under this warranty for defects in the Engine caused by alteration including, but not limited to, polishing; powdercoating; painting; removing or reconfiguring any components; modification, repair, or unauthorized service of the Engine.

The Company shall have no obligation under this warranty if the Engine is used in racing or similar competitive activities. The Company shall have no obligation under this warranty when a competition application, including but not limited to a turbocharger, supercharger or nitrous oxide, is used with the Engine. Further, the Company shall have no obligation under this warranty for any Engine that includes a Competition Package Option since the Package is for use in racing and similar competitive activities.

THE COMPANY SHALL NOT BE LIABLE FOR AND DISCLAIMS ALL CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE ENGINE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

What Must The Original Consumer Purchaser Do To Qualify For Warranty Coverage?

Within thirty (30) days after the date of purchase of the Engine, the original Consumer Purchaser must return a completed Owner's Registration Card along with a copy of the invoice evidencing such purchase to the Company at the following address:

S&S Cycle, Incorporated
Attention: Technical Services
14025 County Highway G P.O. Box 215
Viola, WI 54664-0215

Phone: 608-627-8324 • Fax: 608-627-0773
Email: sstech@sscycle.com
Direct Phone: 608-627-TECH (8324)

THIS WARRANTY IS VOIDABLE AT THE COMPANY'S OPTION IF THE ORIGINAL CONSUMER PURCHASER DOES NOT RETURN TO THE COMPANY THE OWNER REGISTRATION CARD AND A COPY OF THE INVOICE WITHIN THIRTY (30) DAYS FROM THE DATE OF PURCHASE OF THE ENGINE.

Limited Warranty Unassembled Engines

Who Is Covered By This Warranty?

This warranty covers only the original Consumer Purchaser of the Unassembled Engine, the Factory-Assembled Basic Engine or the Factory-Assembled Basic Engine With Options (the "Engine") and is not transferable.

What Does This Warranty Cover?

S&S Cycle, Incorporated (the "Company") warrants this Engine to be free from defects in material and workmanship. If the Engine or any part thereof becomes defective during the warranty coverage period, the Company will, at its option, repair or replace the Engine or any, or all, defective parts. Repair or replacement of defective parts is the sole and exclusive remedy.

How Long Is The Warranty Coverage?

The warranty coverage remains in force for a period of twelve (12) months from the date that the original Consumer Purchaser buys the Engine. However, warranty coverage will automatically terminate if the original Consumer Purchaser sells or otherwise transfers all or any portion of the Engine.

What Is Not Covered by This Warranty?

The Company shall not pay or be responsible for the cost of shipping the defective Engine or part to the Company for service under this warranty, nor will the Company pay for the cost of labor to remove and/or replace the defective Engine or part.

Moreover, the Company shall have no obligation under this warranty in the event that the Engine becomes defective in whole or in part as a result of improper assembly, installation, break-in, maintenance, or use, or any other misuse or mistreatment of the Engine, including, without limitation, operation of the Engine with fuels, oils or lubricants not conforming to specifications published by the Company for use in or with the Engine or continued operation of the Engine after a defect or malfunction occurs or is identified or suspected.

The Company shall have no obligation under this warranty for defects in the Engine's black powdercoat finish, when that option is selected, if the defects are caused by, but not limited to, negligence of parties other than Company; an accident; ordinary wear and tear; assembly or disassembly; power washing; natural occurrences like stone chips; bead blasting; improper maintenance including the use of any harsh cleaning agent, chemical or solvent; and salt or other substances used on streets and highways for maintenance and safety. This warranty does not cover consumables, that is, those parts consumed in the normal operation of the Engine.

The Company provides touch-up paint with each powdercoated Engine. It is the Consumer Purchaser's responsibility to repair minor finish damage to prevent or inhibit further deterioration.

It is the responsibility of the original Consumer Purchaser to cease operation as soon as a defect or malfunction is identified or suspected. The failure to cease operation once a defect or malfunction exists can cause substantial damage to the Engine that could otherwise be avoided.

In addition, the Company shall have no obligation under this warranty for defects in the Engine caused by alteration including, but not limited to, polishing; powdercoating; painting; removing or reconfiguring any components; modification, repair, or unauthorized service of the Engine.

The Company shall have no obligation under this Warranty if the Engine is used in racing or similar competitive activities. The Company shall have no obligation under this warranty when a competition application, including but not limited to a turbocharger, supercharger or nitrous oxide, is used with the Engine. Further, the Company shall have no obligation under this warranty for any Engine that includes a Competition Package Option since the Package is for use in racing and similar competitive activities.

THE COMPANY SHALL NOT BE LIABLE FOR AND DISCLAIMS ALL CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE ENGINE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

What Must The Original Consumer Purchaser Do To Qualify For Warranty Coverage?

Within thirty (30) days after the date of purchase of the Engine, the original Consumer Purchaser must return a completed Owner's Registration Card along with a copy of the invoice evidencing such purchase to the Company at the following address:

S&S Cycle, Incorporated
Attention: Technical Services
14025 County Highway G P.O. Box 215
Viola, WI 54664-0215

Phone: 608-627-8324 • Fax: 608-627-0773
Email: sstech@sscycle.com
Direct Phone: 608-627-TECH (8324)

THIS WARRANTY IS VOIDABLE AT THE COMPANY'S OPTION IF THE ORIGINAL CONSUMER PURCHASER DOES NOT RETURN TO THE COMPANY THE OWNER REGISTRATION CARD AND A COPY OF THE INVOICE WITHIN THIRTY (30) DAYS FROM THE DATE OF PURCHASE OF THE ENGINE.

Be On The Lookout For S&S

We've just updated our website!

If you haven't visited our website recently, you're in for a pleasant surprise. Direct your web browser to www.sscycle.com and get ready for an all new S&S web experience. The difference will be apparent immediately with an all new look, but the further you dig the more you'll find. There are little differences like the improved dealer locator. You can search for a dealer in your area or find an S&S VFI tuning center, and we will even provide you with a map showing you how to get there.
But wait there's more!

The new searchable product catalog makes finding what you want quick and easy. Up to the minute on-line race results, an events calendar, events photos and videos, customer bike photos, tech tips, and forums are just some of the features that you'll find. But that's not all!

New to the S&S Website is an E-commerce area for apparel items. Check out our new apparel line! But now, if something catches your eye, you can order it online. Keep in mind that while we sell apparel items direct to consumers, engine parts are still available exclusively through S&S Dealers. Anybody can make a T-shirt work, but installing and using high performance equipment successfully requires the qualified, personal involvement and support of our dealer network.

Speaking of dealers, they have their own area on our website were they can check stock, place orders, and track orders on line 24/7 365 days a year.

S&S Tours...

are available Wednesday through Friday 11:00 A.M. - 3:00 P.M. Schedule a tour by calling 608-627-2080 Ext. 1363 or email sscust@sscycle.com.

Takin' It To The Streets!

During 2004, the S&S semi truck display made its way to all the major rallies around the continental United States. On display, were the fabulous 124 VFI Shoot out bikes. Built around the S&S 124 VFI SSW+ engine, these are some of the most beautiful custom bikes you could hope to see, but the best part about them is that they were built to ride! A successful road trip and heads-up drag racing showed that they could indeed be ridden and ridden fast. A celebratory, five bike, simultaneous burn out on the dance floor of the Broken Spoke Saloon in Sturgis wrapped up the 124 VFI Challenge, and a good time was had by all!

Keep and eye on the coming issues of Hot Bike Magazine for details of a totally new event for the 2005 riding season.

Event Schedule – Watch for the S&S Semi Display at the following events:

Daytona Bike Week
March 5- 12, 2005
Daytona International Speedway

Myrtle Beach Rally
May 14-21, 2005
Broadway at the Beach, Myrtle Beach SC

Sturgis Motorcycle Rally
August 6-13. 2005
1535 Lazelle Street Sturgis, SD

Laughlin River Run
April 20-23, 2004
Riverside Hotel & Casino, Laughlin NV

Laconia Bike Rally
June 11-18 2005
Meredith Harley-Davidson, Meredith NH

Suggested Retail Pricing in the Continental United States

Part No.	Description	Suggested Retail Price
11-0100	Carb kit w/o manifold, Super B	$374.95
11-0101	Carb kit, Super B - 1955-'65 BT	$403.85
11-0102	Carb kit, Super B - 1966-'78 BT	$382.95
11-0103	Carb kit, Super B - 1979-'84 BT	$401.10
11-0111	Carb assembly, Super B	$289.10
11-0401	Carb kit, Super E - 1955-'65 BT	$439.20
11-0402	Carb kit, Super E - 1966-'78 BT	$414.20
11-0411	Carb kit, Super E - 1979-'84 BT	$426.65
11-0418	Carb kit w/o manifold & mounting hardware, Super E - 1966-'84 BT w/5 gallon tanks	$414.20
11-0422	Carb kit, Super G - 1966-'78 BT	$425.30
11-0431	Carb kit, Super G - 1979-'84 BT	$437.75
11-0438	Carb kit w/o manifold & mounting hardware, Super G - 1966-'84 BT w/5 gallon tanks	$421.80
11-7100	Jet, intermediate - 3 pack - all Super gas (series 94)	$19.90
11-7101	Intermediate jet - 1 each: .0265, .028, .0295 - all Super gas	$19.90
11-7102	Intermediate jet - 1 each: .028, .0295, .031 - all Super gas	$19.90
11-7103	Intermediate jet - 1 each: .0295, .031, .032 - all Super gas	$19.90
11-7104	Intermediate jet - 1 each: .031, .032, .033 - all Super gas	$19.90
11-7105	Intermediate jet - 1 each: .032, .033, .036 - all Super gas	$19.90
11-7106	Intermediate jet - 1 each: .033, .036, .040 - all Super gas	$19.90
11-7200	Main jet - 1 each: .062, .064, .066, .068, .070, .072	$11.40
11-7201	Main jet - 1 each: .066, .068, .070, .072, .074, .076	$11.40
11-7202	Main jet - 1 each: .072, .074, .076, .078, .080, .082	$11.40
11-7203	Main jet - 1 each: .078, .080, .082, .084, .086, .088	$11.40
11-7204	Main jet - 1 each: .090,.092, .094, .096, .098	$9.50
11-7205	Main jet - 1 each: .100, .102, .104, .106, .108	$9.50
11-7270	Jet kit, low range - engines up to 93"/96"	$39.80
11-7271	Jet kit, high range - engines 93"/96" & up	$39.80
11-7272	Jet kit, master - all engines	$68.65
17-0004	Cover, air cleaner, Super E & G, slotted, SSW+	$82.35
17-0045	Air cleaner kit, tall, element and spacers,	$41.15
17-0055	Element, air cleaner, tall	$15.40
17-0099	Air cleaner assembly - 1955-'84 BT, 1957-'85 XL w/GBL, GAL, Super B	$101.95
17-0117	Air cleaner assembly - 1993-up BT (V^2&TC), 1991-2003 XL- w/stock CV carb	$188.45
17-0198	Air cleaner assembly - Super D	$113.35
17-0199	Air cleaner assembly - 1966-'84 BT, 1966-'85 XL w/L series, stock butterfly type carb	$103.45
17-0385	Cover, air cleaner - Super E & G, U.S. Flag	$97.80
17-0400	Air cleaner assembly, Super E, G - 1936-'84 BT, 1957-'85 XL	$113.15

Suggested Retail Pricing in the Continental United States

Part No.	Description	Suggested Retail Price
17-0440	Air cleaner assembly, Super E, G - 1966-'84 BT w/5 gal tanks	$117.75
31-0002	Crankcase assembly - Special Order - 1970-'99 BT	$1,070.95
31-0003	Crankcase assembly - stock bore - 1970-'84 BT	$989.40
31-0004	Crankcase assembly - 3⅜" bore - 1970-'84 BT	$989.40
31-0006	Crankcase assembly - stock bore two-brush generator - 1936-'47 BT	$1,366.40
31-0007	Crankcase assembly - 3⅜" bore two-brush generator - 1936-'47 BT	$1,366.40
31-0008	Crankcase assembly - stock bore two-brush generator - 1948-'64 BT	$1,341.15
31-0009	Crankcase assembly - 3⅜" bore two-brush generator - 1948-'64 BT	$1,341.15
31-0010	Crankcase assembly - stock bore two-brush generator - 1965-'69 BT	$1,319.60
31-0013	Crankcase assembly - 3⅜" bore two-brush generator - 1965-'69 BT	$1,319.60
31-0014	Crankcase assembly - Special Order two-brush generator - 1948-'64 BT	$1,416.95
31-0022	Crankcase assembly - 3⅜" bore - alternator L, generator R bottom/V² top BT	$1,337.90
31-0026	Crankcase assembly - 3⅜" bore - alternator L, generator R - 1963-'84 BT	$1,331.75
31-0030	Crankcase assembly - 3 13/16" bore - 1970-'84 BT	$989.40
31-0071	Crankcase assembly - 3⅜" bore - 1970-'84 BT	$989.40
31-0200	Gearcover kit, crankcase - 1936-'69 S&S BT	$147.45
31-0200	Gearcover kit, crankcase - 1936-'69 S&S BT	$147.45
31-0201	Gearcover kit, crankcase - 1936-'53 BT	$143.75
31-0203	Gearcover kit, crankcase - electronic/point ignition - 1973-'92 BT	$175.45
31-0204	Gearcover kit, crankcase - electronic/point ignition - 1993-'99 BT	$146.75
31-0209	Gearcover kit, crankcase - billet flange - 1973-'92 BT	$267.45
31-0211	Gearcover kit, crankcase - flange - 1973-'92 BT	$198.85
31-0212	Gearcover kit, crankcase - flange - 1993-'99 BT	$171.15
31-0240	Gearcover kit, crankcase - 1954-'69 BT	$143.35
31-0243	Gearcover kit, crankcase - billet flange - 1993-'99 BT	$239.75
31-0299	Gearcover kit, crankcase, black - electronic/point ignition - 1973-'92 BT	$200.45
31-0304	Gearcover kit, crankcase, black - flange - 1973-'92 BT	$223.85
31-0305	Gearcover kit, crankcase, black - billet flange - 1973-'92 BT	$292.45
31-0332	Cover, outer ignition, billet (S&S) - 1970-'99 BT	$49.95
31-0335	Gearcover kit, billet - 1972-'92 BT	$429.95
31-0336	Gearcover kit, billet - 1993-'99 BT	$429.95
31-6059	Cover, oil pump - billet - 1936-'91 BT	$54.50
31-6060	Cover, oil pump - billet custom application - 1936-'91 BT	$54.50
31-6061	Cover, oil pump - billet - 1984-'99 S&S BT	$54.50
31-6062	Cover, oil pump - billet - 1992-'99 BT	$54.50
31-6063	Cover, oil pump - billet custom application - 1992-'99 BT	$54.50
31-6200	Pump kit, oil - billet - 1936-'72 BT	$273.75

Suggested Retail Pricing in the Continental United States

Part No.	Description	Suggested Retail Price
31-6201	Pump kit, oil - custom billet - 1936-'72 BT	$270.70
31-6202	Pump kit, improved primary oil - billet - 1965-'69 BT	$267.80
31-6203	Pump kit, oil - billet - 1970-'91 BT	$269.60
31-6204	Pump kit, oil - custom billet - 1970-'91 BT	$266.60
31-6239	Pump kit w/gears, oil - billet custom application - 1970-'77 BT	$385.70
31-6240	Pump kit w/gears, oil - billet custom application - 1978-'91 BT	$385.70
31-6245	Pump kit w/gears, oil - custom billet - 1948-'53 BT	$397.70
31-6246	Pump kit w/gears, oil - custom billet - 1954-'69 BT	$389.70
31-6248	Pump kit w/gears, improved primary oil - billet - 1965-'69 BT	$386.90
31-6292	Pump kit w/gears, oil - billet - 1948-'53 BT	$400.50
31-6293	Pump kit w/gears, oil - billet - 1954-'69 BT	$392.55
31-6294	Pump kit w/gears, oil - billet - 1970-'77 BT	$388.65
31-6295	Pump kit w/gears, oil - billet - 1978-'91 BT	$388.65
31-6297	Pump kit w/breather gear , improved primary oil - billet - 1970-''72 BT	$333.90
31-9760	Engine, Complete, 80" S&S Alternator Shovel style (Price varies with options selected)	Call for Pricing
31-9765	Engine, Complete, 80" S&S Generator Shovel style (Price varies with options selected)	Call for Pricing
31-9770	Engine, Complete, 93" S&S Alternator Shovel style (Price varies with options selected)	Call for Pricing
31-9775	Engine, Complete, 93" HC S&S Alternator Shovel style (Price varies with options selected)	Call for Pricing
31-9780	Engine, Complete, 93" S&S Generator Shovel style (Price varies with options selected)	Call for Pricing
31-9785	Engine, Complete, 93" HC S&S Generator Shovel style (Price varies with options selected)	Call for Pricing
32-2265	Hot Setup, 93" - 1966-'69 BT	$2,089.95
32-2266	Hot Setup, 93" - 1970-'72 BT	$2,089.95
32-2267	Hot Setup, 93" - 1973-'77 BT	$2,089.95
32-2268	Hot Setup, 93" - 1978-'84 BT	$2,089.95
32-2284	Hot Setup, 84" - 4½" - 1955-'64 BT	$1,494.95
32-2285	Hot Setup, 84" - 4½" - 1965 BT	$1,494.95
32-2286	Hot Setup, 84" - 4½" - 1966-'69 BT	$1,494.95
32-2287	Hot Setup, 84" - 4½" - 1970-'72 BT	$1,494.95
32-2288	Hot Setup, 84" - 4½" - 1973-'77 BT	$1,494.95
32-2289	Hot Setup, 84" - 4½" - 1978-'84 BT	$1,494.95
32-2784	Stroker kit, 84" - 4½", 8.25:1CR C (92-2720) - 1936-'84 BT	$377.65
32-2786	Stroker kit, 86" - 4⅝", 8.50:1CR C (92-2730) - 1936-'84 BT	$391.85
32-2884	Stroker kit, 84" - 4½", 8.75:1CR F (92-2800) - 1936-'84 BT	$377.65
32-2986	Stroker kit, 86" - 4⅝", 8:1CR F (92-2900) - 1936-'84 BT	$377.65
32-2988	Stroker kit, 88" - 4¾", 9:1CR F (92-2900) - 1936-'84 BT	$377.65
33-5050	Camshaft, 514 - 1948-'69 BT	$157.45
33-5051	Camshaft, 514 - 1970-'77 BT	$157.45

Suggested Retail Pricing in the Continental United States

Part No.	Description	Suggested Retail Price
33-5052	Camshaft, 514 - 1978-'84 BT	$157.45
33-5059	Cam, 560 - 1948-'69 BT	$164.95
33-5060	Cam, 560 - 1970-'77 BT	$164.95
33-5061	Cam, 560 - 1978-'84 BT	$164.95
33-5062	Cam, 450S - 1948-'69 BT	$164.95
33-5063	Cam, 450S - 1970-'77 BT	$164.95
33-5064	Cam, 450S - 1978-'84 BT	$164.95
33-5193	Camshaft, 565S - 1948-'69 BT	$157.45
33-5194	Camshaft, 565S - 1970-'77 BT	$157.45
33-5195	Camshaft, 565S - 1978-'84 BT	$157.45
33-5253	Tappet set, hydraulic, w/ HL_2T - 1984-'99 BT, 1986-'90 XL	$214.95
33-5352	Tappet set, hydraulic - 1984-'99 BT, 1986-'90 XL	$199.95
33-5450	Tappet guide set, billet - 1966-'84 BT	$329.95
33-5450F	Tappet guide assembly, front, billet - 1966-'84 BT	$165.50
33-5450R	Tappet guide assembly, rear, billet - 1966-'84 BT	$165.50
33-5451	Hydraulic lifter update kit, 1966-'84 BT	$694.95
53-0013	Jig, oil passage drill	$37.75
53-0452	Wrench, main jet (72 main jet)	$10.85
90-1489	Head set, cylinder - 3⅝" bore - 1966-'78 BT - HC 93"	$878.00
90-1490	Head set, cylinder - special order - 1966-'84 BT	$994.95
90-1491	Head kit, cylinder - 3⅝" bore, .590" lift - 1966-'78 BT - HC 93"	$1,100.70
90-1492	Head set, cylinder - stock bore - 1966-'78 BT	$878.00
90-1493	Head set, cylinder - 3⅝" bore - 1966-'78 BT	$878.00
90-1494	Head set, cylinder - stock bore - 1979-'84 BT	$878.00
90-1495	Head set, cylinder - 3⅝" bore - 1979-'84 BT	$878.00
90-1496	Head kit, cylinder - stock bore, .590" lift - 1966-'78 BT	$1,100.70
90-1496F	Head assembly, front cylinder - stock bore, .590" lift - 1966-'78 BT	$660.40
90-1496R	Head assembly, rear cylinder - stock bore, .590" lift - 1966-'78 BT	$660.40
90-1497	Head kit, cylinder - 3⅝" bore, .590" lift - 1966-'78 BT	$1,100.70
90-1497F	Head assembly, front cylinder - 3⅝" bore, .590” lift - 1966-'78 BT	$660.40
90-1497R	Head assembly, rear cylinder - 3⅝" bore, .590” lift - 1966-'78 BT	$660.40
90-1498	Head kit, cylinder - stock bore, .590" lift - 1979-'84 BT	$1,100.70
90-1498F	Head assembly, front cylinder - stock bore, .590" lift - 1979-'84 BT	$660.40
90-1498R	Head assembly, rear cylinder - stock bore, .590" lift - 1979-'84 BT	$660.40
90-1499	Head kit, cylinder - 3⅝" bore, .590" lift - 1979-'84 BT	$1,100.70
90-1499F	Head assembly, front cylinder - 3⅝" bore, .590" lift - 1979-'84 BT	$660.40
90-1499R	Head assembly, rear cylinder - 3⅝" bore, .590" lift - 1979-'84 BT	$660.40

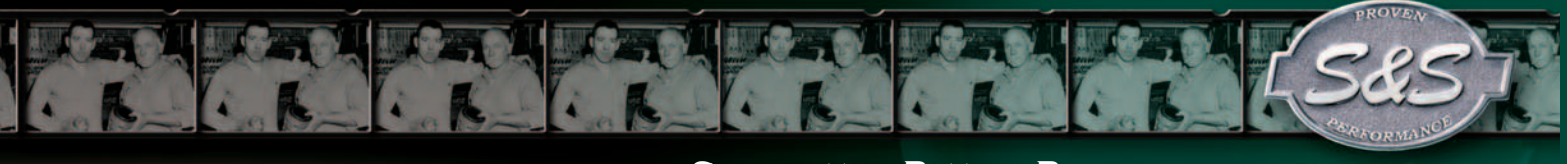
Suggested Retail Pricing in the Continental United States

Part No.	Description	Suggested Retail Price
90-1592	Head set, cylinder, Black - stock bore - 1966-'78 BT	$948.00
90-1593	Head set, cylinder, Black - 3⅝" bore - 1966-'78 BT	$948.00
90-1594	Head set, cylinder, Black - stock bore - 1979-'84 BT	$948.00
90-1595	Head set, cylinder, Black - 3⅝" bore - 1979-'84 BT	$948.00
90-1596	Head kit, cylinder, Black - stock bore, .590" lift - 1966-'78 BT	$1,170.70
90-1596F	Head assembly, front cylinder, Black - stock bore, .590" lift - 1966-'78 BT	$702.40
90-1596R	Head assembly, rear cylinder, Black - stock bore, .590" lift - 1966-'78 BT	$702.40
90-1597	Head kit, cylinder, Black - 3⅝" bore, .590" lift - 1966-'78 BT	$1,170.70
90-1597F	Head assembly, front cylinder, Black - 3⅝" bore, .590" lift - 1966-'78 BT	$702.40
90-1597R	Head assembly, rear cylinder, Black - 3⅝" bore, .590" lift - 1966-'78 BT	$702.40
90-1598	Head kit, cylinder, Black - stock bore, .590" lift - 1979-'84 BT	$1,170.70
90-1598F	Head assembly, front cylinder, Black - stock bore, .590" lift - 1979-'84 BT	$702.40
90-1598R	Head assembly, rear cylinder, Black - stock bore, .590" lift - 1979-'84 BT	$702.40
90-1599	Head kit, cylinder, Black - 3⅝" bore, .590" lift - 1979-'84 BT	$1,170.70
90-1599F	Head assembly, front cylinder, Black - 3⅝" bore, .590" lift - 1979-'84 BT	$702.40
90-1599R	Head assembly, rear cylinder, Black - 3⅝" bore, .590" lift - 1979-'84 BT	$702.40
90-2038	Collar, bottom - L1981-'84 BT (HD#18222-81)	$12.80
90-2053	Spring kit, valve - .550" lift alloy top collar - 1948-'84 BT	$91.75
90-2060	Spring kit, valve - .590" lift steel top collar - 1948-E'81 BT	$146.20
90-2061	Spring kit, valve - .590" lift titanium top collar - 1948-E'81 BT	$221.55
90-2063	Spring kit, valve - .590" lift steel top collar - L1981-'84 BT	$139.25
90-2064	Spring kit, valve - .590" lift titanium top collar - L1981-'84 BT	$214.65
90-4305	Kit, rocker cover - polished billet - 1966-'84 BT	$629.95
90-4320	Arm set, rocker - 1966-'84 BT	$439.95
90-4320	Arm set, rocker - 1966-'84 BT	$439.95
90-4320F	Arm assembly, rocker - FE/RI - 1966-'84 BT	$131.95
90-4320R	Arm assembly, rocker - RE/FI - 1966-'84 BT	$131.95
90-4350	Shaft set, rocker arm - 1966-'84 BT	$159.95
91-9000	Cylinder set - 3⅜" x 5.330" - 1966-'84 BT	$579.90
91-9001	Cylinder kit, 88" SW - 4¼", 7.75:1 CR C - 1966-'84 BT	$614.90
91-9002	Cylinder kit, 88" SW - 4¼", 8.25:1 CR F - 1966-'84 BT	$692.60
91-9003	SW kit, 88" - 4¼", 7.25:1 CR C - 1966-'84 BT	$989.95
91-9005	SW kit, 88" - 4¼", 8.25:1 CR F - 1966-'84 BT	$1,064.95
91-9011	Cylinder set - 3⅞" x 5.330" - 1966-'84 BT	$558.45
91-9016	Cylinder kit, 84" - 3⅞" 8.25:1 CR C (92-2720) - 1966-'84 BT	$635.15
91-9021	Cylinder set- 3½" x 5.330" - 1966-'84 BT	$558.45
91-9026	Cylinder kit, 84" - 3½" , 8¼:1 CR C (92-2720) - 1966-'84 BT	$635.15

Suggested Retail Pricing

Suggested Retail Pricing in the Continental United States

Part No.	Description	Suggested Retail Price
91-9100	Cylinder set - 3⅝" x 5.405" - 1966-''84 BT	$579.90
91-9105	SW kit, 93" - 4½", 8.75:1 CR C - 1966-'84 BT	$1,126.95
91-9105	SW kit, 93" - 4½", 8.751 CR C - 1966-'84 BT	$1,126.95
91-9106	SW kit, 93" - 4½", 9.5:1 CR F - 1966-'84 BT	$1,199.95
91-9200	Cylinder set - 3⅜" x 5.530" - 1966-'84 BT	$579.90
91-9209	SW kit, 96" - 4⅝", 8.25:1 CR C - 1966-'84 BT	$1,126.95
91-9210	SW kit, 98" - 4¾", 9.25:1 CR C - 1966-'84 BT	$1,126.95
91-9212	SW kit, 96" - 4⅝", 9:1 CR F - 1966-'84 BT	$1,199.95
91-9213	SW kit, 98" - 4¾", 10:1 CR F - 1966-'84 BT	$1,199.95
91-9300	Cylinder set - 3⅜" x 5.630" - 1966-'84 BT	$579.90
91-9305	SW kit, 103" - 5", 10:1 CR C - 1970-'84 BT	$1,126.95
91-9306	SW kit, 103" - 5", 11:1 CR F - 1965-'84 BT	$1,199.95
91-9400	Cylinder set - 3⅜" x 5.440" - 1966-'84 BT	$579.90
92-2720	Piston set, 3⅞" std. - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2720	Piston set, 3⅞" std. - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2721	Piston set, 3⅞" +.010" - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2722	Piston set, 3⅞" +.020" - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2723	Piston set, 3⅞" +.030" - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2724	Piston set, 3⅞" +.040" - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2725	Piston set, 3⅞" +.050" - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2726	Piston set, 3⅞" +.060" - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2727	Piston set, 3⅞" +.070" - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2728	Piston set, 3⅞" +.080" - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2729	Piston set, 3⅞" +.090" - 4½", 8.25:1 C - 1936-'84 BT	$187.20
92-2730	Piston set, 3⅞" std. - 4 5/8", 8.50:1 C - 1936-'84 BT	$207.25
92-2800	Piston set, 3⅞" std. - 4½", 8.5:1 F - 1936-'84 BT	$215.20
92-2900	Piston set, 3⅞" std. - 4 5/8", 8:1/4¾", 9:1/5", 9.5:1 F - 1936-'84 BT	$215.20
93-1061	Gasket, head - 3⅞"/3½" x .032" copper - 1966-'84 BT - 10 pack	$79.10
93-1062	Gasket, head - 3⅜" x .032" copper - 1966-'84 BT - 10 pack	$79.10
93-1069	Gasket, base - 3⅝" x .020" steel - 1966-'84 BT - 10 pack	$97.90
93-1070	Gasket, base - 3⅞"/3½" x .020" steel - 1966-'84 BT - 10 pack	$98.35
93-1075	Gasket, exhaust pipe - 1966-'84 BT - 10 pack	$18.75
93-1076	Bypass, oil passage - ⅜" OD x ⅝" ID x ⅝" - 1948-'84 BT - 10 pack	$33.65
93-3023	Nut, cylinder base, ½" hex - 1936-'84 BT	$6.85
93-3024	Bolt assembly, head - 1948-'84 BT	$6.95
93-3063	Nut, cylinder base, 7⁄16" hex - 1936-'84 BT - 8 pack	$53.95
93-3063	Nut, cylinder base, 7⁄16" hex - 1936-'84 BT - 8 pack	$53.95



Suggested Retail Pricing in the Continental United States

Part No.	Description	Suggested Retail Price
93-5014	Pushrod kit, solid tappet adjustable - +1/16" steel - 1966-'84 BT	$95.85
93-5015	Pushrod kit, solid tappet adjustable - +3/16" steel - 1966-'84 BT	$95.85
93-5016	Pushrod kit, solid tappet adjustable - +5/16" steel - 1966-'84 BT	$95.85
93-5026	Pushrod set, non-adjustable - Special Order steel - 1966-'84 BT	$65.20
93-5028	Pushrod kit, solid tappet non-adjustable - Special Order steel - 1948-'65 BT	$88.50
93-5030	Pushrod set, non-adjustable - std. alloy - 1957-'85 XL	$39.00
93-5036	Pushrod set, adjustable - Special Order steel - 1986-up XL	$103.40
93-5038	Pushrod set, non-adjustable - Special Order steel - 1957-'85 XL	$55.00
93-5041	Pushrod set, non-adjustable - std. steel - 1936-'47 61" BT	$45.90
93-5044	Pushrod set, non-adjustable - std. steel - 1941-'47 74" BT	$45.90
93-5045	Pushrod set, non-adjustable - Special Order steel - 1936-'47 BT	$62.35
93-5058	Pushrod kit, solid tappet non-adjustable - std. steel - 1953-'65 BT	$72.10
93-5062	Pushrod kit, solid tappet non-adjustable - Special Order steel - 1966-'84 BT	$89.95
93-5063	Pushrod kit, solid tappet adjustable - Special Order steel - 1966-'84 BT	$112.30
93-5067	Pushrod kit, solid tappet adjustable - std. steel - 1966-'84 BT	$95.85
93-5068	Pushrod kit, solid tappet non-adjustable - std. steel - 1966-'84 BT	$73.65
93-5069	Pushrod set, non-adjustable - std. steel - 1966-'84 BT	$48.80
93-5070	Pushrod set, hydraulic tappet adjustable - std. steel - 1966-'84 BT	$59.00
93-5071	Pushrod set, hydraulic tappet adjustable - Special Order steel - 1966-'84 BT	$75.35
93-5080	Pushrod kit, solid tappet adjustable - +1/8" steel - 1966-'84 BT	$95.85
93-5081	Pushrod kit, solid tappet non-adjustable - 1/8" steel - 1953-'65 BT	$72.10
93-5082	Pushrod kit, solid tappet non-adjustable - +1/16" steel - 1953-'65 BT	$72.10
93-5083	Pushrod kit, solid tappet non-adjustable - +1/8" steel - 1953-'65 BT	$72.10
93-5084	Pushrod kit, solid tappet non-adjustable - +3/16" steel - 1953-'65 BT	$72.10
93-5091	Pushrod set, hydraulic tappet adjustable - std. steel - 1953-'65 BT	$59.35
93-5092	Pushrod set, hydraulic tappet adjustable - Special Order steel - 1953-'65 BT	$183.65
93-5123	Pushrod set, quickee - 74"-103" - 1966-'84 BT	$169.95
93-5135	Pushrod set, quickee - special order	$199.95

S&S Cycle invites you to join...

11-Second Club

Are you fast enough?

Here's how you can join some fast company.

- First, go fast -- after breaking in your engine according to the manufacturer's instructions.
- Next, provide the documentation listed below.
- Then, toss everything in an envelope and send it to S&S.
- We'll send you an official 11-Second Club patch for your leathers or denims, a certificate authorizing braggin' rights, and a free 11-Second Club T-shirt.

Here's what we need from you:

1. Proof that your street-ridden motorcycle (D.O.T. tires, full charging system, no wheelie bars or air shifts) equipped with one of our carburetors and, hopefully, numerous other S&S products, has turned an 11.99 or quicker quarter-mile time. We'll need an official timing slip from a sanctioned dragstrip dated after June 1, 1997 and signed by the timekeeper. (A good photocopy will do.) We don't care if you trailer the bike to the track, so long as it sees more action on the street than off.

2. A photograph of yourself, anyone else you'd care to include, and the motorcycle. Action shots are preferred if sharp and clear, but the carburetor **MUST** be in plain view.

3. A signed copy of this statement:

Please tell us a little about yourself and your motorcycle.
Included the model and year, a list of all engine and frame modifications, the type of exhaust, and tire brand and model.
Be sure to mention all S&S products used!

Submitted materials may be used for promotional purposes.
Members will receive a 11- Second Club certificate, patch, and T-shirt, but no payment or other considerations.

I do hereby attest that I have fulfilled all membership requirements of the S&S Cycle 11-Second Club as outlined above and that my motorcycle is fully licensed for use on all city, state and federal highways. I also attest that starting is self-contained or by kickstart, requiring no external mechanical devices, and that this motorcycle is ridden more often on the street than the racetrack. I understand that some risk to rider and equipment is present in all forms of motorcycle racing and do hereby accept all risks and liabilities associated therewith.

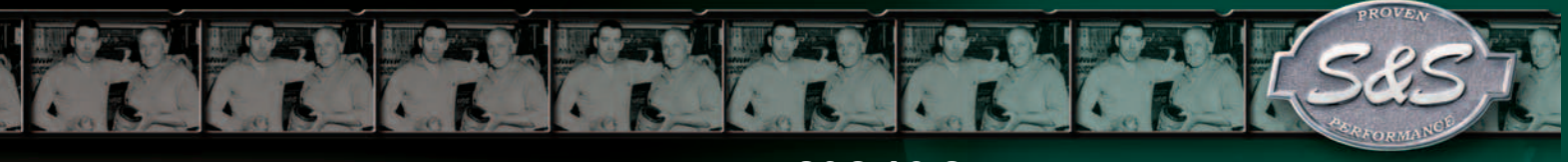
_____ Signature

_____ Date

_____ T-Shirt Size

Please include a few words about yourself and your motorcycle. Include the model and year, a list of engine and frame modifications, displacement, compression ratio, type of exhaust, and tire brand. Be sure to mention any S&S products used!

Send inquiries and membership applications to: 11-Second Club, Attention: Carla Langyel
S&S Cycle, Inc. • 14025 County Hwy. G Box 215 • Viola, Wisconsin 54664 USA
Please allow 4 weeks for processing.



S&S Cycle invites you to join...

10-Second Club

Are you fast enough?

Continuing in the spirit of the 11-Second Club...

The 10-Second Club is for registered and licensed street motorcycles with S&S carbs. No wheelie bars are permitted. D.O.T. tires, full charging systems, lighting, and self-contained starters are required. Any chassis or engine modifications compatible with legitimate street-use are permitted. Mufflers are between you and the authorities, but the motorcycle must be street-ridden on a regular basis.

Here's what we need to welcome you in:

1. Proof that your street-ridden motorcycle is equipped with one of our carburetors and, hopefully, other S&S products as well, has turned a 10.999 or quicker quarter mile. Send either the original or a good photocopy of an official timing slip from a sanctioned dragstrip; it must be dated after 01/01/99 and signed by the timekeeper. The registered owner must ride the motorcycle for the qualifying pass.
2. Your t-shirt size and a photograph of yourself and the motorcycle. The carburetor must be in plain view.
3. A signed and dated copy of the statement below.

Please tell us a little about yourself and your motorcycle.
Included the model and year, a list of all engine and frame modifications, the type of exhaust, and tire brand and model.
Be sure to mention all S&S products used!

Submitted materials may be used for promotional purposes. Members will receive a 10-Second Club certificate, patch, and T-shirt, but no payment or other considerations

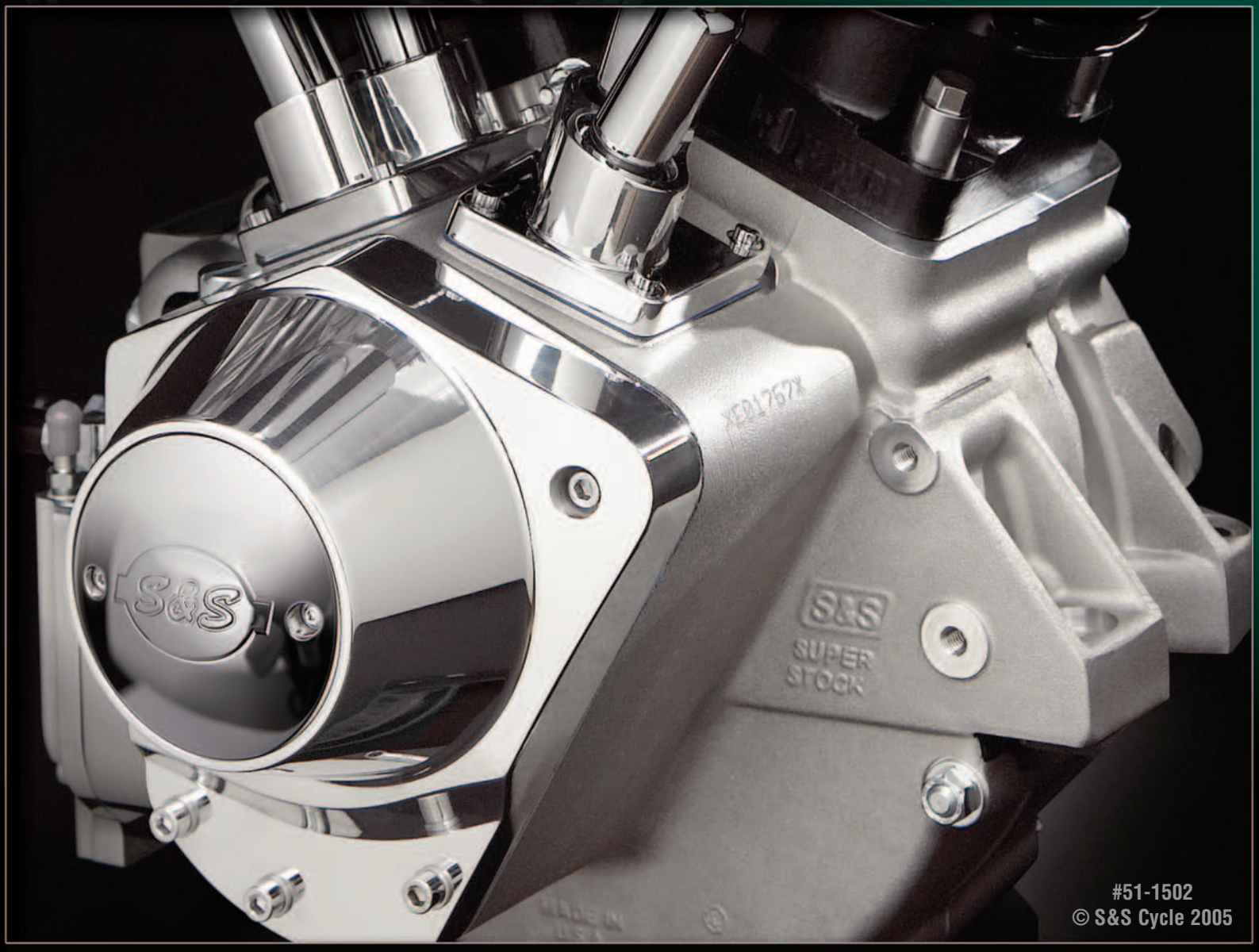
I do hereby attest that I have fulfilled all membership requirements of the S&S Cycle 10-Second Club as outlined above and that my motorcycle is fully licensed for use on all city, state and federal highways. I also attest that starting is self-contained or by kickstart, requiring no external mechanical devices, and that this motorcycle is ridden more often on the street than the racetrack. I understand that some risk to rider and equipment is present in all forms of motorcycle racing and do hereby accept all risks and liabilities associated therewith.

_____ _____ _____

Signature *Date* *T-Shirt Size*

Please include a few words about yourself and your motorcycle. Include the model and year, a list of engine and frame modifications, displacement, compression ratio, type of exhuast, and tire brand. Be sure to mention any S&S products used!

Send inquiries and membership applications to: 11-Second Club, Attention: Carla Langyel
S&S Cycle, Inc. • 14025 County Hwy. G Box 215 • Viola, Wisconsin 54664 USA
Please allow 4 weeks for processing.



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S&S Cycle, Inc.

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